Psychology of Religion and Spirituality

The Language of Ineffability: Linguistic Analysis of Mystical Experiences

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Mystical experiences are often described as "ineffable," or beyond language. However, people readily speak about their mystical experiences if asked about them. How do people describe what is supposedly indescribable? In this study, we used quantitative linguistic analyses to interpret the writings of 777 participants (45.5% female, 51.0% male) who recounted their most significant spiritual or religious experience as part of an online survey. High and low scorers on a measure of mystical experiences differed in the language they used to describe their experiences. Participants who have had mystical experiences used language that was more socially and spatially *inclusive* (e.g., "close," "we," "with") and used fewer overtly religious words (e.g., "prayed," "Christ," "church") than participants without such experiences. Results indicated that people can meaningfully communicate their mystical experiences, and that quantitative language analyses provide a means for understanding aspects of such experiences.

Keywords: inclusion, linguistic analysis, mystical experiences, religion, spirituality

If that is ineffable which cannot be spoken, then that is not ineffable which is called ineffable

—Augustine, 1958, pp. 10–11

Mystical experiences are temporary mental states that include profound feelings of unity, positive emotions, a noetic quality, and most notably for the present study, alleged ineffability (Austin, 2006; Griffiths, Richards, McCann, & Jesse, 2006; Hood, Hill, & Spilka, 2009; James, 1902/1985; Pahnke, 1969; Richards, 1975; Stace, 1960; Wulff, 2000). The criterion of

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ineffability means that by definition, mystical experiences are beyond verbal description. Whereas some scholars maintain that language cannot adequately capture any aspect of mystical experiences (a view called "apophatic mysticism"), others maintain that the term "ineffability" qualifies one's capacity to convey the full breadth of these profound experiences (Proudfoot, 1985). In general, people rarely discuss these deeply meaningful and generally positive experiences with others on their own accord (Hay, 1990; Tamminen, 1991). Yet when asked about them, those who have had such experiences often go on to describe them in detail, using language. This pattern led Chinese poet and comic Po Chu-I to comment on the mystical text, the *Tao te Ching*: "'He who talks doesn't know, he who knows doesn't talk' that is what Lao-tzu told us, in a book of five thousand words. If he was the one who knew, how could he have been such a blabbermouth?" (Mitchell, 1988, p. 89).

Attempts have been made to examine verbal and written reports of mystical experiences. James's (1902/1985) *Varieties of Religious Experience* rests mostly on personal accounts of New England Protestants gathered by one of the fathers of the psychology of religion and spirituality, Edwin Starbuck. Durkheim (1912/2012) undertook a study of religious experience in Aborigines, and found that such experiences were central to these communities. Maslow (1964) described the phenomenon of "peak experiences," which share a large degree of overlap with mystical experiences, by consistently seeing them appear in transcripts of interviews with highly successful, "self-actualized" individuals. Laski's

(1961) work on "transcendent ecstasy," found that these experiences are rather common, and that when asked to describe them, people can readily do so.

Adding a more systematic approach, the Alister Hardy foundation collected thousands of accounts of experiences from people who had responded to the questions, "Have you ever had the feeling of being close to a powerful spiritual force that seemed to lift you out of yourself?" or "Have you ever been aware of or influenced by a presence or power, whether you call it God or not, which is different from your everyday self?" (Hardy, 1979; Hay & Morisy, 1985). These studies replicated previous findings that religious, spiritual, and mystical experiences are relatively common, and not the rare, esoteric experiences that some mistakenly suppose (Scharfstein, 1973). A synthesis of recent survey research found that about 35% of respondents have had mystical experiences (Hood et al., 2009). However, this figure is open to a large degree of interpretation. For instance, Hay (1979) found that 65% of respondents affirmed being aware of or influenced by a presence or power, but this number dropped to 29.4% affirmative responses after follow-up interviews clarified the question and responses. The authors further differentiated between numinous experiences, which refer to a sense of presence (20.2%), and mystical experiences, which are characterized more by the sense of union (9.2%). More research is needed to develop an epidemiology of religious, spiritual, and mystical experiences that includes well-defined classifications to establish prevalence, triggers, descriptions, underlying mechanisms, and outcomes of these often positively transformative experiences.

Analyzing the language of reports of mystical experiences may help with this effort. However, linguistic descriptions of mystical experiences defy easy categorization (Hay, 1979; Thomas & Cooper, 1978). Although rich qualitative data have been compiled through a number of studies, the sheer volume of information—and differing classification systems—has made it difficult to draw clear conclusions (Hood et al., 2009). The lack of quantitative analyses makes it difficult to provide evidence for or against claims about the linguistic content of reports of mystical experiences. For example, some claim that reports of mystical experiences include universal aspects (Hood, 2006; Stace, 1960) whereas others argue that there are no common elements (Katz, 1978; Proudfoot, 1985). Still others claim that reports of spontaneous mystical experiences are indistinguishable from drug-induced experiences (Smith, 1964), whereas others argue that they are very different (Zaehner, 1961). These are still open questions and the subject of ongoing research (Wulff, 2000).

While quantitative studies have demonstrated that many people have varieties of religious, spiritual, and mystical experiences (e.g., Gallup, 1978; Hood et al., 2001), and quantitative linguistic analyses has been used to examine religious and spiritual self-identification (e.g., Keller et al., 2013), quantitative linguistic analyses of descriptions of mystical experiences have generally not occurred. One exception was a linguistic analysis that differentiated mystical experiences from psychedelic experiences and schizophrenic experiences (Oxman et al., 1988). However, this study was limited by the data collection methods that were used. Narratives were taken from people who had written publically about their experience with the onset of schizophrenia, taking a psychedelic drug, or having a mystical experience. Therefore, the study identified more superficial words used to describe the experience, including contextual information such as how schizophrenics use the word "schizophrenic" and "illness" more often in their descriptions. The study did demonstrate, however, the feasibility of differentiating mental states through language.

Examining underlying features of narrative descriptions has been limited largely by the lack of available methods for such analyses. Newer tools from computer science are now making quantitative analysis of qualitative information possible. In this study, we used tools from computational linguistics to quantitatively analyze the language people used to describe their spiritual, religious, and mystical experiences. To analyze the writing, we used two different approaches. First, we used a common tool for "top-down" linguistic analysis: Linguistic Inquiry and Word Count (LIWC), a computer-based program that counts the frequency of words used from a predetermined set of lists or lexicons (Tausczik & Pennebaker, 2010). The program includes 64 categories, with words that were rationally assigned based on psychological theory, linguistic knowledge, and common sense. For example, the "exclusive" language category contains words such as "without," "either," "except," and "versus." Diaries, blogs, homework assignments, and research abstracts have all been analyzed using this closed-vocabulary method (Pennebaker & King, 1999). Intuitive results have been found, such as a study that showed that people scoring highly on neuroticism used more negative emotion words (Pennebaker & King, 1999). Less obvious results have also been generated, such as older individuals use more positive emotion and fewer self-reference words (Pennebaker & Stone, 2003).

Second, we used an open vocabulary ("bottom-up") approach, called *Differential Language Analysis* (DLA; Schwartz et al., 2013), which identifies words and topics most correlated with scores on a given scale or outcome measure. Unlike the closed, top-down, a priori approach of LIWC, DLA is not limited by preestablished categories and dictionaries, but rather allows the data to dictate relevant words and topics. Whereas LIWC identifies abstract categories of language, DLA provides a transparent view into fine-grained patterns that distinguish individuals on a given outcome.

We applied both closed (top-down) and open (bottom-up) vocabulary approaches to written narratives of religious, spiritual, and mystical experiences. We focused particularly on mystical experiences, while bearing in mind the common qualification that such experiences are ineffable. Based on what is currently understood about mystical experiences, we expected that those individuals who scored highest on a measure of mystical experiences would describe their experiences using language indicative of unity, as this quality has been most emphasized in theoretical, qualitative, and empirical studies (Austin, 2006; Griffiths et al., 2006; Hood, 2003; James, 1902/1985; Stace, 1960). However, the analyses were also exploratory in nature, as our primary intention was to apply computational linguistic analyses to the corpus of narratives about religious, spiritual, and mystical experiences, identifying key patterns for further study.

Method

Participants

We used a convenience sample of participants who found and completed our online survey between 2008 and 2013, which was

hosted on a website by the University of Pennsylvania under the supervision of one of the coauthors (ABN). The University of Pennsylvania's Institutional Review Board approved the collection and analyses of the data. Of 2,718 respondents who began the survey, 1,986 completed the questionnaire. Of those, 1,182 were excluded for having fewer than 25 words about their experience. An additional 27 respondents were excluded due to incomplete data, leaving a final sample size of 777.

The word count threshold was chosen to exclude participants who did not adequately responded to the prompt. Responses contained a median word count of 227 words per written response. We chose 25 words as a balance between adequately sampling a person's language and keeping our total number of participants as high as possible. Responses falling below this level were essentially nonresponses that were qualitatively different than responses with more than 25 words (e.g., "none," "I will update this later").

Participants were generally middle class (75.42%), Caucasian (82.37%), and relatively balanced between females (45.30%) and males (51.22%). Slightly fewer of excluded individuals were middle class (72.37%), female (40.36%) and Caucasian (78.66%). In terms of religious affiliation, our sample was disproportionately "other" (31.27%) and atheist (26.38%), compared to the U.S. national averages of 14.9% and 1.6%, respectively (Pew Research Center, 2008). Christians represented 19.69% (compared with the national average of 78.4%). Other religions included Jewish, Buddhist, Muslim, Hindu, Pagan, Native American, agnostic, and Unitarian. Over half of the sample (56.89%) reported that they had taken psychedelic drugs at some point in their lives. Comparing those included versus those excluded (when data were available), the main sample included significantly more atheists, $\chi^2(1) = 3.87$, $p = .049$ and "other," $\chi^2(1) = 11.04$, $p < .001$, than the excluded sample, with no significant difference for Christians, $\chi^2(1) = 0.02$, $p = .89$. The main sample scored higher on mysticism, 3.22 vs. 3.06, $t(925) = 3.03$, $p < .01$, $d = .18$. There were no significant differences between the main and excluded sample for socioeconomic status, $\chi^2(2) = 3.49$, $p = .17$, gender, $\chi^2(1) = 2.41$, $p = .12$, or ethnicity, $\chi^2(7) = 10.67$, $p = .15$.

Measures

Participants completed a questionnaire that included a mystical experience measure, demographic information, and several other scales.[1] Participants were then asked to write about any variety of spiritual or religious experiences they have had.

Mystical experience. The Death Transcendence Scale was developed by Hood and Morris (1983) and is based on the theoretical work of Lifton (1976, 1979), who identified five modes of "death transcendence." These modes, which are represented as subscales, consist of ways in which one can conceptualize oneself as living on after bodily death through identification with something more enduring. From a third-person perspective, one can "live on" in the hearts and minds of family and friends (biosocial subscale), through the work one has produced (creative subscale), by becoming a part of the natural world (nature subscale), or in a personal afterlife (religious subscale).

The fifth mode, "mystical," refers to a mystical experience of unity, and is the only subscale that measures the occurrence of an experience rather than a conceptualization of the self (Hood, 1976). The items are based on the M-Scale (Hood, 1975), which is

the most widely used measure of mystical experiences and has demonstrated validity and reliability across a number of cross-cultural samples, as well as across samples of varying religious commitments (Hood et al., 2001). The current study included the five items from the mysticism subscale, answered on a 4-point Likert scale (1 = *strongly disagree*, 4 = *strongly agree*; $\alpha = .90$).

Narrative descriptions. Participants were asked to

> describe in detail the various spiritual and/or religious experiences that you have had and how they have affected you. If you have had a specific religious or spiritual experience(s), please describe it in as much as detail as possible—as long or as short as you wish.

Data Analyses

We used two forms of linguistic analyses to quantitatively analyze the narrative descriptions: a closed vocabulary (top-down) approach and an open vocabulary (bottom-up) approach. For the closed approach, we used the Linguistic Inquiry and Word Count (LIWC) program, which includes 64 dictionaries[2] (Pennebaker, Mehl, Niederhoffer, 2003). For every participant's narrative description, the program counted the number of word instances that belong to each of the 64 categories. These counts were then divided by the total number of words, yielding a percentage of total words for each category. For example, for one narrative, 7.3% of the words used were in the exclusion dictionary, whereas for another narrative, exclusion words made up only 2.2% of the total words. Using the Pearson correlation coefficient, we then correlated the percentage of use of each of the 64 categories with the mystical experience subscale of the Death Transcendence Scale. Because of the high number of correlations, p values were corrected with Simes (1986) multiple test procedure to adjust for multiple comparisons.

For the open vocabulary approach, we used Differential Language Analysis (DLA; Schwartz et al., 2013). DLA consists of three steps: (a) open-vocabulary language feature extraction; (b) correlational analysis; (c) result sorting and visualization. In the first step, a tokenizer split the sentences into single words. In the second step, words were correlated with the mystical experience score from the Death Transcendence Scale. We limited analyses to words mentioned in at least 5% of the writings, resulting in 2,745 different words included in the analysis. In the third step, correlations were sorted by magnitude and direction, and then visualized as word clouds, which display the 100 words most strongly correlated with mystical experiences. In the word clouds, the size of the word corresponds to the strength of the correlation coefficient with the mysticism scale score, and color indicates the frequency the word occurs. The word clouds were used descriptively, so no adjustments were made for multiple comparisons.

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[1] Scales included The Quest Scale (Batson & Schoenrade, 1991), The Religiousness Measure (Sethi & Seligman, 1993), The Intrinsic Religious Motivation Scale (Hoge, 1972), and The Index of Core Spiritual Experiences (INSPIRIT; Kass, Friedman, Lesserman, Zuttermeister, & Benson, 1991). As the focus of the current study was on mystical experiences, these measures were not analyzed in this study.

[2] Note that categories are not mutually exclusive. For example, the words in the "anger" dictionary are also in the "negative emotions" category.

Results

Religious affiliation influenced the reported degree of mystical experience. Monotheistic individuals (Christian, Jewish, Islamic) scored lowest on the mystical experience measure, with eastern/other religions (Buddhist, Hindu, Pagan, Secular Philosophies) scoring highest and atheists in the middle (see Figure 1).

To examine the language of mystical experiences, we first computed the correlations between LIWC categories and mystical experience scores. Results, summarized in Table 1, indicated a few highly significant findings of modest effect size. Participants with higher mystical experience scores were more likely to use *inclusive* language, $r = .20, p < .001$, using words like "we," "with," "into," and "and." High scorers on the mystical experience measure used fewer *third person singular* words like "he," "her," "him," and "his", $r = -.13, p < .001$. Additionally, participants with higher mystical experience scores used significantly fewer overtly *religious* words, $r = -.20, p < .001$.

We then used the open vocabulary approach. As summarized in Table 2, across the sample as a whole, religious language is prominent, with "God" being one of the most commonly used words. However, mirroring the closed approach results, those who have had mystical experiences used more inclusive language and fewer religious words. see Figure 2 shows the words that most distinguish high and low levels of mystical experience by listing the 100 words most positively and negatively correlated with mystical experience. For example, those scoring higher on the mystical experience measure were more likely to mention "oneness," "and," and "everything," whereas those on the low end were more likely to mention "Christ," "prayed," and "monk."

To rule out the possibility that our finding that monotheists tend to score lower on the mystical experience scale was driving the language results, we conducted a supplemental analysis on language use, separately across religious affiliations. Based on self-reported religion, participants were classified as monotheists (Islamic, Jewish, Christian, $n = 194$), atheists ($n = 205$), and eastern/other (Buddhist, Taoist, Hindu, Pagan, and idiosyncratic responses

that were written in to a text box; $n = 327$). We correlated the LIWC categories and mystical experience scores separately for the three groups. Inclusive and religious language showed consistent patterns of correlation across the groups; inclusive and religious language remained significantly correlated with similar effect sizes at conventional significant thresholds (without Simes correction). *Inclusive* language was positively correlated with mystical experiences across all categories of religions, including monotheists, $r = .18, p = .011$, atheists, $r = .26, p = <.001$, and eastern/other, $r = .18, p < .001$. The negative correlation with *religious* language also held across monotheists, $r = -.16, p = .027$, atheists, $r = -.22, p = .002$, and eastern/other, $r = -.14, p = .012$.

Discussion

Applying closed and open vocabulary analytic approaches to narrative descriptions about religious or spiritual experiences, we found that people who have had mystical experiences tended to use *more* inclusive language (i.e., "everything," "and," "with," "oneness") and *less* third person singular language (i.e., "he," "she," "him," "her"). We also found that participants who had mystical experiences use *less* religious language (i.e., "Christ," "religious," "holy," "hell"; Table 1 and Figure 2).

We expected participants who had mystical experiences to use more language indicative of unity, which was partially supported by the correlation with "inclusive" language. The finding lends support to the primacy of the perception of unity in mystical experiences (Austin, 2006; Griffiths et al., 2006; Hood, 2003; James, 1902/1985; Stace, 1960). Unlike "exclusive" language, which is associated with distinction making and separation, inclusive language reflects joining or union on *spatial* and *social* dimensions.

In research using LIWC, the inclusive language lexicon has previously been organized under the "spatial" category, because of words reflecting closeness with objects in the environment (Pennebaker, & King, 1999). It has also been used to measure "social" factors such as interpersonal attachment style, acknowledging that
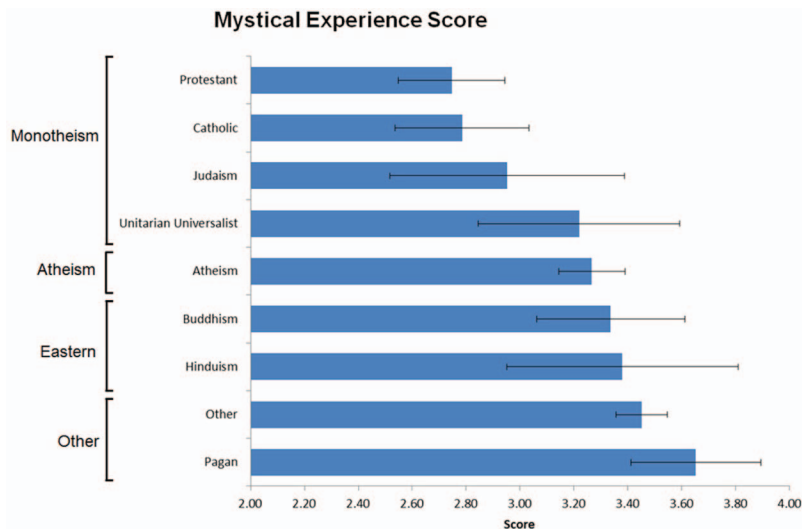

Figure 1. Mystical experience scores across the different religious groups with more than 10 participants. Bars indicate 95% confidence intervals. See the online article for the color version of this figure.

Table 1

Correlation Between LIWC Categories and the Mystical Experience Subscale

Category	Words	r	Simes-corrected Significance threshold
Inclusive	*and, with, we, into*	0.20	< .001
Cognitive processes	*all, always, every, ever*	0.11	< .01
Third person singular	*he, she, his, her*	−0.13	< .001
Religion	*religion, soul, Christ, pastor*	−0.20	< .001

Note. Correlations are limited to categories passing a Simes multi-test significance test at *p* < .05. See http://www.liwc .net/descriptiontable1.php for category summaries and reliability information.

inclusive words could refer not only to closer environmental space but also to closer perceived social space, and thus a kind of social connection (Stone, 2003). Because of its role in joining distinct objects and concepts, the inclusive language lexicon is now categorized as a "cognitive process," alongside other lexica such as insight and causation (Tausczik & Pennebaker, 2010). Thus, the current inclusive language lexicon contains conceptual joining words such as "plus," "come," and "add;" spatial words such as "around," "inside," and "close" as well as social words such as "we," "with," and "both." In this context, the negative correlation with third person singular language also makes sense, as words like "we" trump distinctions like "her" or "him" from the perspective of unity.

Inclusive language is related to social connection and engagement. For example, the inclusive language lexicon is associated with secure attachment styles rather than preoccupied or dismissive styles (Cassidy, Sherman, & Jones, 2012). Inclusive language is also predictive of more social interaction on social networks (Mahmud, Chen, & Nichols, 2014). Use of the word "we" has been specifically tied to a strong sense of community, and is often evoked after collective upheaval or tragedies (Pennebaker & Lay, 2002).

This association between inclusive language and social connection may help explain some of the mechanisms through which mystical experiences promote prosocial intentions (Griffiths et al., 2006; Griffiths, Richards, Johnson, McCann, & Jesse, 2008). Self-expansion theory (Aron & Aron, 1997) postulates that one's sense of self can include other individuals and groups. The sense of unity with other people, which is felt to an extreme extent during mystical experiences, has been shown to increase prosocial attitudes and behavior (Waugh & Fredrickson, 2006). For example, Aron et al. (1991) showed that subjects asked to anonymously distribute money do so about equally between themselves and others who they feel a sense of unity with, but unequally to those with whom they feel less unity. The language findings indicate that

a primary feature of mystical experiences may derive from perceived social connection.

Other research has found links between mystical experiences and spatial unity. The theory of "allo-inclusive identity" suggests that self/other overlap can extend beyond other individuals or groups of people to one's spatial environment, perhaps including all of existence (Leary, Tipsord, & Tate, 2008). Thus the description of feeling "at one with all things." In neuroimaging research, mystical experiences are associated with alterations in brain areas related to representing spatial boundaries. For example, practices like meditation and prayer that produce states of unity correlate with inhibition in the posterior superior parietal region of the brain (Newberg et al., 2001; Newberg, Pourdehnad, Alavi, & d'Aquili, 2003). This brain area is associated with representing bodily spatial boundaries, including the usual distinction that separates one's sense of self from the rest of existence (Newberg et al., 2001).

The finding that people who have had mystical experiences use fewer religion-specific words is interesting, as "God" was one of the most frequently used words in the overall corpus (see Table 2). Therefore, there may be something about mystical experiences that does not lend itself to religious language. This is relevant to the theoretical debate between perennialists and constructivists. Perennialists, the "lumpers" of this debate, believe that there are common, universal aspects of mystical experiences (Hood, 2006), whereas constructivists, the "splitters," believe that cultural differences prohibit any such relation (Katz, 1978). The perennialist perspective, more formally described as the "common core theory" or "unity thesis," posits that there are a subset of features in mystical experiences that are shared, even though descriptions of these experiences are heavily influenced by the sociocultural factors (Hood, 2003). From this perspective, mystical experiences should be reported in ways that share similar features despite the vast differences in socioculture contexts (Forman, 1998). On the other hand, the constructivist or "diversity theory" view holds that the experiences themselves are influenced by sociocultural factors, not just the de-

Table 2

The 25 Most Frequently Mentioned Words Across the Narrative Descriptions (N = 777; 351,806 Words Total)

Word	Count	Word	Count	Word	Count	Word	Count	Word	Count
God	1,421	Felt	898	Years	562	Things	478	First	415
Experience	1,273	Like	844	Feel	559	Feeling	457	Body	413
Life	1,135	Experiences	800	People	532	Way	429	Love	392
One	1,115	More	776	Know	487	Mind	427	Sense	390
Time	1,036	Spiritual	730	Believe	480	World	420	Church	383

Note. Excludes function words (e.g., pronouns, prepositions, auxiliary verbs, conjunctions, particles).

Figure 2. Top 100 words that were correlated most positively (top) and negatively (bottom) with the mystical experience sub-scale scores. Larger words indicate stronger correlations with mystical experience. Color indicates frequency of word use among participants (grey = infrequently used, blue = moderately used, red = frequently used). All words were independently significantly correlated with mystical experience at $p < .05$ (as a descriptive summary, significance values were not corrected for multiple comparisons).

scriptions of them (Katz, 1978). According to this view, sociocultural contexts are not merely a linguistic gloss over a universal mystical experience, as the perennialists would have it, but rather these cultural influences are vital elements of the experience itself, prohibiting universal generalizability (Proudfoot, 1985).

From the perennialist perspective, the negative correlation between mystical experiences and religious language may lend support to Hood and Chen's (2005) claim that religious language is invoked reluctantly and only when it is the only cultural touchstone available to describe the experience. From the constructivist (or diversity theory) perspective, the current study may be criticized in that the mystical experience measure that we used may reflect a bias toward a particular belief system. For example, an item such as "I have had an experience in which I realized the oneness of myself with all things" may represent a worldview of

immanence (there is a divine in and through physical reality; Levine, 2002), or monism (there is an underlying unity to reality despite seeming distinctions; Schaffer, 2010). Most monotheists, however, subscribe to the logical opposites of these views, transcendence and dualism, respectively (Bielfeldt, 2001; Engebretson, 1996). The language that suggests immanence and monism in the scale may therefore be alienating to individuals who hold monotheistic worldviews. For example, Zaehner (1961) argues that monotheists are interested in theistic union, not union with nature or an impersonal, monistic absolute. While studies that have tested different religious and cultural populations have generally found the M-scale to be neutral (Chen, Yang, Hood, & Watson, 2011; Hood, 2006; Hood & Chen, 2013; Hood & Francis, 2013; Hood et al., 2001; Hood & Williamson, 2000), we found significantly lower endorsement of mystical experience among monothe-

ists. Either way, by evaluating the language itself, our approach can potentially provide additional empirical insight to both the perennialist and constructivist perspectives.

Another implication of our findings derives from the high percentage of respondents who did not report a religious or even spiritual commitment, yet nonetheless reported having mystical experiences. This may point to a certain type of person, a "mystical but not religious or spiritual" type. Similarly, there is a "spiritual but not religious" type that emphasizes the experiential elements of spirituality rather than the more institutionally affiliated, dogmatic emphasis of religion (Zinnbauer et al., 1997). The "mystical but not religious or spiritual" type identified in this study may go one step farther than the "spiritual but not religious" type by emphasizing experiences to an even greater extent while downplaying or rejecting religious institutions in addition to spiritual beliefs. The "mystical but not religious or spiritual" type is apparent in recent books by avowed atheists like Alain d'Botton's (2012) *Religion for Atheists*, Barbara Ehrenreich's (2014) *Living With a Wild God*, and Sam Harris's (2014) *Waking Up*. The authors of these books relate mystical-type experiences without accompanying religious or even spiritual language or endorsement of these beliefs. Along these general lines, some have promoted a "perennial psychology" that holds the mystical experience itself as of primary importance, over and above interpretive beliefs (Forman, 1998), though this has rarely extended to atheism and other secular philosophies in popular usage. The distinctions between religious, spiritual, and secular beliefs and varieties of mystical experiences require further scholarship and empirical research, both of which can be complemented by linguistic analyses.

Limitations and Future Directions

Several limitations must be acknowledged. Although the mystical experience subsection of the death transcendence scale that we used was derived from the widely used M-Scale and the alpha was relatively high ($\alpha = .90$), this subscale has not received extensive psychometric validity testing. There may also be a perennialist bias to the scale, creating an interaction between the religious beliefs of participants and their responses to the scale. Future research on this scale should continue to explore response characteristics from diverse samples and be compared with scales capturing differing but related varieties of experiences. A value of the data-driven linguistic analysis approach is that alternative measures and concepts can be explored, in turn informing the questionnaires and scales used to measure a given construct.

There was also a selection bias to our sample, as the individuals who visited our survey website might have been more likely to report more religious, spiritual, and mystical experiences, produce certain types of narratives, or use specific terminology. The demographic that we sampled was, in general, Caucasian and middle class, and around half the sample was nonreligious. Therefore, care should be taken in generalizing results to other populations. It is likely that a larger sample recruited using different mechanisms might yield different results. Although our supplemental analyses did show that our language findings hold across all religious affiliations, the presence of so many nonreligiously affiliated individuals limits generalizability. Although results from the linguistic analysis techniques that we used have been interesting and at times impressive (e.g., Eichstaedt et al., 2015; Pennebaker et al., 2003; Schwartz et al., 2013; Tausczik &

Pennebaker, 2010), correlations with content categories such as those found in this study are often quite modest. So although the findings in this study include reliable trends and can usefully point to underlying social and psychological processes, these results account for only a rather small percentage of the total variance in the language used to describe religious, spiritual, and mystical experiences.

Some scholars also critique the lack of appreciation for nuance, ignorance of word sense, and computational complexity endemic to these methods. Although these quantitative techniques find replicable patterns in large amounts of data, they are not able to produce the kind of nuance garnered from a grounded theory approach or other in-depth qualitative methods. However, findings from these quantitative approaches can provide a rich source of hypothesis generation, which other qualitative and quantitative approaches can explore in greater detail.

Linguistic analysis nonetheless offers an important tool for studying religious, spiritual, and mystical experiences. In particular, these methods are capable of differentiating between mental states based on language use. For example one linguistic analysis study successfully identified the specific psychoactive drug that an individual had been administered before writing (Bedi et al., 2014). It is our hope that similar approaches are applied to differentiate various related types of experiences (e.g., mystical, numinous, self-transcendent) in large-scale, cross-cultural, and historical corpora, to empirically derive the unique features of these varieties of experiences. Furthermore, the successful identification of feelings of unity through language provides a new tool to explore potential relationships between perceived unity and other prosocial, well-being, and health outcomes.

Conclusion

Mystical experiences are notoriously difficult to put into words, leading people to rarely discuss them, and earning them the label "ineffable" (Hay, 1990; James, 1902/1985). Perhaps it is as Melville's (1851) Ishmael claims, "For whatever is truly wondrous and fearful in man, never yet was put into words" (p. 447). And yet linguistic descriptions of these supposedly unspeakable experiences exist and through their analysis we may discover they have some stable, underlying features. The results of the present study, that people who have mystical experiences describe them using more inclusive language and fewer religious words, may be one such telling feature. The profoundly positive significance that mystical experiences often hold for those who have them underscores the scientific value of investigating these allegedly indescribable experiences. This study represents an attempt, using linguistic analysis tools, to make headway into "effing" the ineffable by increasing our empirical understanding of mystical experiences.

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