THE EFFECT OF RELIGION ON THE HUMAN MIND: 
ANALYSES OF LANGUAGE USE AND PERSONALITY

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Previous research has shown that being religious is beneficial in various ways. Though religion’s benefits are well-studied, few investigations have provided quantitative and explorative perspectives on its effects. Most studies concern religion’s influence on specific psychological aspects of the human mind. This study investigated whether people’s language use reflects the effects of religious training. We analyzed writing samples from 12 new believers in the Catholic Church via a language analysis program and conducted relevant psychological tests. The results showed language patterns changed significantly with religious training, even though these changes did not show any correlations with the psychological scales. These results indicate that religiosity can be reflected in certain language behaviors. Moreover, the results suggest language usage can be a reliable and sensitive index for measuring religiosity.

Key words: religiosity, language uses, KLIWC, Korean

The positive effects of religiosity have been well characterized by previous studies. Typical findings have included a positive association between religiosity and subjective well-being (Chamberlain & Zika, 1988; Delbridge, Headey, & Wearing, 1994; Willits & Crider, 1988), healthy lifestyles (Cochran, 1992; Wallace Jr & Forman, 1998), and improvements in mental health (Regnerus & Smith, 2005; Smith & Faris, 2005).

Researchers have proposed several possible mechanisms whereby religion might bring about these beneficial effects. Fredrickson (2002) argued that religion induces people to attribute greater value to ordinary life events and, in so doing, engenders positive emotions, such as gratitude, hope, joy, and serenity. This view emphasized the resulting positive emotions’ roles in subjective well-being. On the other hand, Ardelt (2003) argued that religion provides a sense of meaning for life, on a comprehensive level, and the sense of having a purposeful life is more important than emotional stability is. Finally, Spilka and McIntosh (1997) argued that religion enables people to acquire a sense of ultimate control over life, obtainable through prayer or gratitude. Moreover, according to Stromberg (1990), a created sense of self-transformation through the conversion experience brings about such changes.

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However, few studies have provided quantitative and explorative perspectives on religion’s effects. Most of the extant literature focuses on the religion’s influence on specific psychological aspects or benefits to the human mind. This study aimed to investigate whether one of the most important human behaviors, language use, could reflect religiosity. Studies have intensively examined whether language behaviors reflect various psychological variables (for a review, see Pennebaker, Mehl, & Niederhoffer, 2003). Our ultimate goal was to establish an empirical basis for using writing or speaking behavior as a main dependent variable in psychological research.

The LIWC (Linguistic Inquiry and Word Count) is a language analysis program used in the previous studies. It has successfully reflected clinical, social, developmental, and cognitive psychological variables. The LIWC comprises four main variable dimensions: linguistic, psychological, relativity, and content words (Pennebaker & King, 1999). Pennebaker and King (1999) provided data on the relationships between the “Big Five” personality dimensions and English language usage. A factor analysis on the 72 English LIWC variables produced four main factors: immediacy, making distinctions, social past, and rationalization. Immediacy includes first-person singular pronouns, articles, long words, present tense, and discrepancies. Making distinctions includes exclusiveness, tentativeness, negations, and inclusive words. Social past includes past tense, positive emotion words, and social words. Finally, rationalization includes insight words, negative emotion words, and causation words. Correlating these factors with the Big Five showed immediacy correlated negatively with openness, and making distinctions correlated negatively with extraversion and conscientiousness.

LIWC has been translated into versions for many languages, including Korean. This study used the Korean LIWC (KLIWC) as its main analysis tool. The KLIWC was developed using several variables from the original English version and incorporating grammatical and cultural variables that are key for use in the Korean culture (Lee, Shim, & Yoon, 2005). For example, most Korean words are composed of multiple morphemes (Yoon & Kwon, 1997). Each letter in a Korean word has some meaning. Thus, the program developed needed to count the number of morphemes in each word. In addition, Korean culture emphasizes respect for elders and encourages the use of respectful words. Thus, the program needed to calculate the ratio of respectful words to the total. The KLIWC has been validated on a Korean sample, as a useful measure of personality for investigating the relationship between language use and personality (Lee, Kim, Seo, & Chung, 2007).

In the current study, we focused on the relationship between language and religious training (or religion) and explored whether people’s language usage reflected their psychological changes, in terms of the religious training. Again, to our knowledge, studies have rarely examined language changes by religiosity by means of a language analysis program. Additionally, our main interest in this study was those aspects of language most sensitive to religiosity. To accomplish this, we studied language behaviors of new believers in Catholicism via the KLIWC and psychological test inventories and also explored the relationship patterns between certain KLIWC variables and psychological test scores.
EXPERIMENT

METHODS

Participants

Twenty-five new believers, enrolled in catechism training as catechumens, voluntarily participated in this study. Their training lasted six months, and each training session was about an hour per week. No participants held any religious beliefs previously; they were newcomers to the cathedral. This training is a prerequisite for receiving baptism, a requirement for believers, in many churches in Korea, and the course’s main purpose is to convert secular people’s beliefs and values about the world and the Christian God.

The cathedral was Apgujong Cathedral, a typical cathedral, located in Seoul, Korea. Our participant group’s average age was 38.5, and it comprised 15 females and 10 males. Another 24 people, who were enrolled in an adult education course at Kyunghee University, participated in this study as the control group. They were a quasi-control group because their testing took place at a different place and their manner of receiving training was different. All participants in this control group took a general liberal arts class that focused on humans and the (Christian?) God in a neutral manner (that is, in a secular, not religious, way). Their average age was 26.7, and there were 10 females and 14 males.

Data Gathering Procedure

We conducted all of these measurements and the initial writing session during the participants’ second new believer training class. A researcher visited the cathedral and asked the catechumens to participate in a writing session and, subsequently, a set of three psychological tests. All individuals in this training participated in this study, and they gave their informed consent to participate. For this initial writing session, the participants had 20 minutes to write whatever came to mind on an A4-size piece of paper (a technique called “consciousness writing”; see Pennebaker & King, 1999). After finishing this task, we administered the Self-Esteem Scale (Rosenberg, 1965), the Trait Anxiety Scale of Spielberger & Vagg (1995), and, to measure the new believers’ coping strategies, the Coping Scale (Folkman & Lazarus, 1985). The Coping Scale includes eight independent coping strategies, as follows: problem-focused coping, detachment, wishful thinking, seeking social support, tension-reduction, compromising, risk-taking, and anger-expression. We used Korean versions of the three instruments, translated and standardized by Lee (1996), Kim (1991), and Kim & Lee (1988), respectively.

To select personality factors to study, we first examined the course of training, to extract core candidate personality factors that the program sought to change in the new believers. We interviewed the church’s program coordinators who conducted the training program to finalize the psychological scales we would use. Through this process, we selected three individual difference factors, viz.: self-image, trait anxiety, and coping style. In constructs of personality, these three personality factors are consistent with religion’s benefits and effects, discussed above in the Introduction. We collected the participants’ second (i.e., final) writing samples and re-administered all three instruments at the last believer training session. On that same day, we collected the same type of consciousness writing samples from the control group. We analyzed both groups’ writing samples via the KLIWC and also obtained correlations between the psychological testing scores and the KLIWC variables.

RESULTS

We excluded from the analyses eight participants (six males & two females) who did not complete the training program or respond to the second survey. Usually, about this proportion of new believers drop out of the training, because they were unready to become a Catholic, or for some other personal reason. KLIWC analysis of the raw data from all participants yielded eight language variables with frequencies less than 0.5% in all texts, and we excluded these from the analyses. We first compared the participants’ responses to
the psychological scales. Individual paired t-tests yielded no significant difference between before and after the training on any of the three personality tests. In examining just these results, one would reach the surprising conclusion that religious training does not create notable changes in personality.

However, we observed that language use was more sensitive to possible changes in the new believers’ thinking and behavior. We compared the participants’ writings from before and after the training regarding linguistic and psychological variables. For this purpose, we conducted multiple paired-sample t-tests on the remaining 69 variables. Of these, seven variables showed a statistically significant difference between the male and female groups. Table 1 shows their language usages differed significantly between the two time conditions. As Table 1 shows, many differences occurred, in various psychological dimensions. For example, words reflecting “positive emotion” or “negative

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Table 1. Language usage data and differences between before and after the training in the new believers (NB, N = 17) and the control group (CG, N = 24)

<table>
<thead>
<tr>
<th>Category</th>
<th>Dimension</th>
<th>Group</th>
<th>Before M</th>
<th>Before SD</th>
<th>After M</th>
<th>After SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linguistic</td>
<td>Clause per sentence ratio</td>
<td>NB</td>
<td>18.58</td>
<td>8.28</td>
<td>12.14</td>
<td>4.13</td>
<td>3.44</td>
<td>.003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CG</td>
<td>16.51</td>
<td>11.69</td>
<td>12.89</td>
<td>4.20</td>
<td>1.48</td>
<td>.152</td>
</tr>
<tr>
<td></td>
<td>1st person single pronoun</td>
<td>NB</td>
<td>0.13</td>
<td>0.23</td>
<td>0.31</td>
<td>0.42</td>
<td>-1.98</td>
<td>.066</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CG</td>
<td>0.40</td>
<td>0.28</td>
<td>0.28</td>
<td>0.39</td>
<td>1.21</td>
<td>.236</td>
</tr>
<tr>
<td>Adjective</td>
<td></td>
<td>NB</td>
<td>4.68</td>
<td>2.81</td>
<td>2.72</td>
<td>1.95</td>
<td>2.46</td>
<td>.026</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CG</td>
<td>3.80</td>
<td>1.01</td>
<td>4.16</td>
<td>1.65</td>
<td>-0.877</td>
<td>.390</td>
</tr>
<tr>
<td>Psychological</td>
<td>Positive emotion</td>
<td>NB</td>
<td>2.55</td>
<td>2.24</td>
<td>4.83</td>
<td>4.12</td>
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<td>.049</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CG</td>
<td>1.90</td>
<td>0.80</td>
<td>1.80</td>
<td>1.07</td>
<td>.418</td>
<td>.680</td>
</tr>
<tr>
<td></td>
<td>Sadness or Depression</td>
<td>NB</td>
<td>0.92</td>
<td>0.94</td>
<td>0.21</td>
<td>0.44</td>
<td>2.93</td>
<td>.010</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CG</td>
<td>0.40</td>
<td>0.35</td>
<td>0.39</td>
<td>0.45</td>
<td>.034</td>
<td>.973</td>
</tr>
<tr>
<td></td>
<td>Expectation</td>
<td>NB</td>
<td>1.41</td>
<td>1.18</td>
<td>2.25</td>
<td>1.54</td>
<td>-1.80</td>
<td>.091</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CG</td>
<td>1.83</td>
<td>1.05</td>
<td>1.65</td>
<td>0.96</td>
<td>.710</td>
<td>.485</td>
</tr>
<tr>
<td></td>
<td>Friend</td>
<td>NB</td>
<td>0.45</td>
<td>0.64</td>
<td>0.10</td>
<td>0.29</td>
<td>1.90</td>
<td>.076</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CG</td>
<td>0.36</td>
<td>0.30</td>
<td>0.33</td>
<td>0.32</td>
<td>.391</td>
<td>.699</td>
</tr>
<tr>
<td></td>
<td>Metaphysical issues</td>
<td>NB</td>
<td>0.93</td>
<td>0.86</td>
<td>2.38</td>
<td>2.03</td>
<td>-3.28</td>
<td>.005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CG</td>
<td>0.63</td>
<td>0.52</td>
<td>0.78</td>
<td>0.88</td>
<td>-0.747</td>
<td>.463</td>
</tr>
<tr>
<td></td>
<td>Religion</td>
<td>NB</td>
<td>0.26</td>
<td>0.35</td>
<td>1.39</td>
<td>1.23</td>
<td>-3.85</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CG</td>
<td>0.26</td>
<td>0.39</td>
<td>0.20</td>
<td>0.34</td>
<td>.586</td>
<td>.564</td>
</tr>
<tr>
<td></td>
<td>Slang words</td>
<td>NB</td>
<td>0.12</td>
<td>0.23</td>
<td>0.00</td>
<td>0.00</td>
<td>2.14</td>
<td>.048</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CG</td>
<td>0.10</td>
<td>0.17</td>
<td>0.13</td>
<td>0.31</td>
<td>-0.479</td>
<td>.636</td>
</tr>
</tbody>
</table>
emotion” appeared more frequently and less frequently, respectively, after the religious training. Furthermore, participants significantly increased usage of “expectations,” “metaphysical issues,” and “religion” after the training, whereas they decreased that of “friend” and slang words. All results were quite consistent with lay people’s shared, common-sense expectations of religion’s effect and suggest that notable changes in participants’ thinking had occurred.

Additionally, when we compared the new believers in the initial period of training to the post-training condition, the linguistic category showed significant differences in three dimensions. Specifically, we found a lower ratio of clauses per sentence and of adjective use and a higher score on usage of the first person singular pronoun in the After condition. These differences suggest some very interesting possible interpretations. First, the lower clause-per-sentence ratio and their less frequent use of adjectives indicate participants’ language became simpler. Previous research on religion’s effects suggests religion might reduce believers’ various concerns and worries, and we think this change results in simpler but clearer language. For the control group, most of these types of changes did not occur. Only the variable “clauses per sentence” showed a similar decrease after their secular training. This indicates religious training elicited some substantial psychological changes that language usage could reveal.

However, we consider that the new believers’ greater use of the first person singular pronoun after the training requires quite careful interpretation, since others have observed frequent use of this type pronoun correlates to depression (Bucci & Freedman, 1981; Rude, Gortner, & Pennebaker, 2004; Weintraub, 1981). These results were typical of comparisons of healthy (or normal) and clinical patient populations, and, to our knowledge, no study has reported a meaningful relationship between the “I” preference and any psychological factor reflecting a negative aspect of the human mind. Rather, previous studies have explored such a preference for the first person singular pronoun in typical female language from a normal population (Pennebaker et al., 2003) and in a truth-teller’s speech or writing. The relationship between the “I” preference and honesty may illuminate the current study’s results. For example, Gottlieb, Wiener, & Mehrabian (1967) reported that liars referred to themselves less often in their stories. Likewise, in experimental situations wherein researchers induced normal college students either to tell the truth or to lie about their thoughts or behaviors, truth-tellers consistently used first person singular pronouns at a higher rate (Newman, Pennebaker, Berry, & Richards, 2003). Taken together, the linguistic category results in the current study indicate that new believers became clearer in their thoughts and more honest in their language post-training.

In sum, this is the first study that provides supporting, quantitative data showing religious activities can elicit language style changes, though some previous research qualitatively discussed the influence of religious language on psychological change (Stromberg, 1990). That language styles cannot be easily changed by simple education or training is indicated by the absence of any significant changes in the control group. Intense training, or more significant mental activities such as religious training, are needed to elicit changes in language styles.

To further explore the psychological differences before and after the religious
training, we analyzed the individual relationships between the participants’ language usages and their responses to the psychological scales. As discussed, we found no significant difference between before and after the training on any psychological scale. Indeed, few psychological studies have found religion or religious training exerts an effect on psychological traits.

All scales used in the current study assess personality traits rather than states. One important difference between trait and state variables is their stability (Spielberger, 1966). A trait variable is less influenced by context or priming than is a state variable. Therefore, owing to its relatively short duration, religious training likely cannot create changes in personality traits. Furthermore, considering trait variables is beyond the current study’s scope, because we characterized relatively short-term effects of religion. However, it would be worthwhile to explore what occurs between the time a person begins to embrace religion and any ultimate changes due to the person having held those religious beliefs over a long period. To explore this question, we elected to assess how participants’ language, which would reflect current cognitive/psychological structures, correlated to their personality structures.

First, we analyzed the individual relationships between self-image and language for each participant, before and after the training. Table 2 shows that, in the Before condition, five KLIWC variables correlated with self-image; namely, “proper noun,” “mood/emotion,” and “social process” correlated negatively with self-esteem, and “inference” and “achievement” correlated positively with self-esteem. To explore whether these are general population patterns, we also analyzed 100 college students’ written texts on the same topic. These results indicated that the observed relationships between language usage and personality traits were quite similar between before-training participants and these college students, except that the relationship between self-esteem and “mood/emotion” was positive in the college students. Therefore, the data from our relatively low number of participants are reliable. However, these relationships did not appear in the After condition. The only significant relationship with self-esteem was that of the second person plural pronoun. A possible interpretation of this result is that, in the After condition, participants’ chronic personality aspects had less influence on their current psychological reflections, as expressed in language. We think the religious training’s effect intervened between language and personality. Note that none of the participants’

<table>
<thead>
<tr>
<th>Group</th>
<th>Proper noun</th>
<th>Mood/Emotion</th>
<th>Social Process</th>
<th>Inference</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>–.49**</td>
<td>.21**</td>
<td>–.55**</td>
<td>.50**</td>
<td>.21*</td>
</tr>
<tr>
<td>After</td>
<td>.01</td>
<td>.04</td>
<td>–.38</td>
<td>.38</td>
<td>.03</td>
</tr>
<tr>
<td>College students</td>
<td>–.16*</td>
<td>15*</td>
<td>–.16*</td>
<td>.18*</td>
<td>.22**</td>
</tr>
</tbody>
</table>

* p < .05; ** p < .01
responses on any included psychological scales showed a significant difference between the Before and After conditions. Obviously, language appeared more sensitive to the training-induced changes than the psychological scales were. Furthermore, this study’s results should not be treated as arbitrary or coincident, despite the small sample size. The relationships between language use and personality in the new believers (in the Before state) were quite consistent with those in the college students, suggesting that the language analysis results are reliable. Therefore, it is unlikely the patterns we observed before the training just coincidently disappeared afterward. We found no significant relationship between language use and state anxiety.

In sum, some significant changes in self-esteem and coping strategies across the religious training were very noticeable. First, there was a significant relationship between achievement and self-esteem before the training but not after the training. We obtained similar patterns between self-esteem and social processes, emotion, proper nouns, and so on. The main variables that correlated with self-esteem lost their significance after the training.

We also observed that discrepancies between language use and personality traits before and after the training were clearest and most specific regarding coping styles. As shown in Table 3, before the training, participants’ coping styles correlated mainly to concepts in the sociality category, such as “Decency,” “Communication,” and “Peers.” After the training, we observed the majority of significant relationships were in emotional categories, such as “Positive emotion,” “Positive feeling,” and “Sadness.” They differed also in the relationship between participants’ use of personal pronouns and coping style. Specifically, before the training, participants’ use of the first person singular pronoun correlated positively with “Wishful thinking,” whereas use of the first person plural pronoun correlated negatively with “Problem-focused coping.” In addition, these patterns were consistent with those of the control group. However, we observed quite different patterns in the After state. Then, first person singular pronoun use correlated negatively with “Tension-reduction,” whereas first person plural pronoun use correlated positively with “Problem-focused coping.”

Although clear interpretation of the meaning of these individual relationships is beyond the scope of this study, the change in the overall pattern of relationships between individual language usage and coping styles implies religious training had a fundamental effect. A person’s coping style is not merely a personality trait. People are able to choose a coping style as a cognitive strategy with relatively greater flexibility and changeability than they can vary other, more stable personality traits. Note that language usage has various relationships with coping style. This result suggests religion’s influence on psychology is possibly exerted first on the more flexible personality traits, affecting more stable personality traits later. Further, we emphasize that traditional methods using only psychological scales are less sensitive to these subtle, religion-induced changes.

We obtained some interesting findings on the relationship between KLIWC variables and individual coping strategies across the religious training. First, the Social support-seeking strategy correlated significantly with “Communication” and “Peers” before the training, but not after. This might indicate religion can compromise the social need for
<table>
<thead>
<tr>
<th>Coping Strategy Group</th>
<th>1st person single pronoun</th>
<th>1st person plural pronoun</th>
<th>Communication</th>
<th>Positive emotion</th>
<th>Positive feeling</th>
<th>Sadness or Depression</th>
<th>Decency</th>
<th>Detachment</th>
<th>Wishful thinking</th>
<th>Seeking social support</th>
<th>Tension-reduction</th>
<th>Compromising</th>
<th>Risk-taking</th>
<th>Anger-expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>After</td>
<td>College students</td>
<td>Before</td>
<td>After</td>
<td>College students</td>
<td>Before</td>
<td>After</td>
<td>College students</td>
<td>Before</td>
<td>After</td>
<td>College students</td>
<td>Before</td>
<td>After</td>
<td>College students</td>
</tr>
<tr>
<td>Problem-focused coping</td>
<td>.08</td>
<td>−.53**</td>
<td>.00</td>
<td>−.16</td>
<td>.16</td>
<td>−.28</td>
<td>−.28</td>
<td>.28</td>
<td>−.28</td>
<td>.35</td>
<td>−.32</td>
<td>−.29</td>
<td>.17</td>
<td>.64**</td>
</tr>
<tr>
<td>Detachment</td>
<td>−.25</td>
<td>−.36**</td>
<td>−.40</td>
<td>.26</td>
<td>.35</td>
<td>.32</td>
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<td>.37</td>
<td>.37</td>
<td>.28</td>
<td>−.15**</td>
<td>.28</td>
</tr>
<tr>
<td>Wishful thinking</td>
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<td>−.02</td>
<td>.00</td>
<td>.26</td>
<td>.26</td>
<td>.28</td>
<td>.28</td>
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<td>.28</td>
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<tr>
<td>Compromising</td>
<td>.10</td>
<td>−.29</td>
<td>.01</td>
<td>.16</td>
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<td>.16</td>
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<td>.16</td>
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<td>.16</td>
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<td>.16</td>
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<tr>
<td>Risk-taking</td>
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<td>−.27</td>
<td>.24</td>
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<td>.01</td>
<td>.01</td>
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<td>Anger-expression</td>
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</tbody>
</table>

*p < .05; ** p < .01
interaction with friends and acquaintances. In addition, the “Problem-solving coping” strategy showed different patterns before and after the religious training. It correlated significantly with “Communication”, “Peers”, and “Decency” before the training, but not after. This might indicate participants’ problem-solving approach involved interacting with others before the training, but not after the training (Seybold & Hill, 2001).

Finally, McCullough and Willoughby (2009) argued that self-regulation and -monitoring should be underlying variables that elicit positive changes, including various coping strategies. The roles that self-regulation and -monitoring play in eliciting coping strategy changes are not yet clear. Further studies should address such issues regarding this topic.

Editor’s note re “Data gathering procedure” and “Results” sections: I noticed these lacked some information regarding procedures, especially regarding the two control groups. I revised such sequences and provided missing words and phrases to the extent possible under these circumstances and made notes regarding others, but I think these sections would benefit from substantive editing, which is beyond my scope. To be clear, the control group did not respond to any psychological scales.

DISCUSSION

As discussed in the Introduction, previous research has focused on the benefits of religion. Nonetheless, few studies provide quantitative and explorative perspectives on religion’s effects. Most studies to date are concerned with religion’s influence on specific aspects of human psychology. The current study found many relevant differences between new believers’ language usage before and after religious training, each quite consistent with individual, previous studies demonstrating specific effects of religion. Further, the current study’s results suggest that analysis of language usage and observation of the individual relationships between language use and responses on psychological scales can provide more sensitive assessments of religion-induced changes than traditional scale or observation-based studies can.

Several limitations of this study should be noted. First, language use changes could be due to the training method (e.g., speaking in Catholic style) than to the fact that the subject matter happened to be a religion. That is, the religious training may not have constituted “religious conversion.” However, we think this is not a fundamental factor, because if, for example, such a style factor seriously influenced participants’ language usage, then we should likewise observe changes in a variety of functional linguistic category words—such as prepositions, prefixes, or suffixes—which are very sensitive to a person’s speech style. However, this is not the case.

Another limitation is that the control group did not come from a similar source; they were college students. Comparing students and religious seekers could be somewhat inappropriate for discerning the religion’s effects. The religious group’s language changes could arise from other activities accompanying the training, such as attending church, changing social activities and social groups, and selecting different media to view.
Due to the small sample size, the current study cannot examine possible gender differences in language usage. However, previous studies suggest gender should be an important factor. For example, according to Knight, Woods Jr., and Jindra (2005), males use more adventurous metaphors and focus more on themselves, whereas females prefer peaceful metaphors and are more likely to refer to other people in their retrospective stories of religious conversion. Future research should examine whether such gender differences appear consistently as in the current study.

Finally, the religious group we tested was limited to the Catholics of a certain area. Thus, generalization of the results would be the main limitation of this study. In addition, demographic characteristics of the group and trainer and the period of training also represent a narrow sample.

Despite these limitations and defects in this study, it provides linguistic quantitative data regarding religious training. Numerous studies, using English language analysis programs and the LIWC, have proven linguistic style changes are sensitive behaviors that correlate with clinical, social, cognitive, and developmental variables. Extending the realm of study that uses these programs to religion would provide a fundamental basis for using language styles as the main dependent variables in psychological research. Further studies using broad-based religious samples and sophisticated controlled conditions are needed.

REFERENCES


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