Linguistic and Psychological Features of Autogenous and Reactive Obsessions in Obsessive Compulsive Disorder

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Abstract

Obsessive-compulsive disorder (OCD) is typically thought of as a single mental health disorder. More recently, internally-focused (autogenous) and externally-focused (reactive) subtypes have been proposed. This study examined the language used in describing these subtypes using anonymous posts from Reddit. The study used natural language processing software to look at differences in the use of the linguistic variables of first-person singular, first-person plural, third-person singular, and third-person plural as well as use of the psychological variables negative emotion, anger, anxiety, insight, causation, certainty, risk, religion, swear words, body, health, sexual, discrepancy, future, and death. A log likelihood ratio (G^2) was calculated to determine the differences of usage rates in the two corpuses. The results showed a large effect size of the use of first-person singular pronouns in both the autogenous and reactive corpuses. The psychological variables of “insight” and “sexual” had the largest effect sizes in the autogenous corpus, while “health” and “body” had the largest effect sizes in the reactive corpus. The differences in the usage rates of the linguistic and psychological variables in the corpuses show the heterogeneity of OCD and the importance of understanding lesser known forms of obsessions such as those with repugnant themes. Clinical implications and future research recommendations are discussed.

Keywords: reactive OCD, autogenous OCD, obsessive-compulsive disorder, LIWC, corpus linguistics

Introduction

Movies often offer glimpses into the lives of people with psychiatric disorders. For example, the main character in *As Good As It Gets* ritually avoids stepping on cracks, washes his hands excessively, and locks his door numerous times; he is affected by obsessive-compulsive disorder (OCD) and fears repercussions if he does not complete these rituals. However, OCD is a heterogeneous psychiatric disorder that is about more than just contamination, orderliness, and repetitions. Much of the diagnostic knowledge about OCD does not show the clinically presented diversity of the obsessions and compulsions of those with the disorder. A common outlet for the OCD community is online forums, which offer a veil of protection from judgment or scrutiny due to the anonymous nature of the posts, and provides support and advice for individuals who suffer from forms of OCD that are perceived as less acceptable than contamination, symmetry, checking, or ordering. The language used in online posts to describe the nature of symptoms, distress, and psychological processes can offer insight about the differences in the lived experiences of those with the subtypes of OCD. This could also potentially lead to deeper understanding about the ways OCD manifests in individuals who feel afraid or ashamed to disclose their symptoms in treatment.

The unique lived experiences of individuals can vary drastically across the subtypes of OCD, which affects approximately 2% of the population; it is considered a highly heterogeneous condition (McKay et al., 2004). Greater understanding of how individuals talk about their symptoms of and experiences with OCD in online forums could provide insight into the unique mechanisms of distress, as well as offer ways to effectively treat them in therapy. However, there is currently a lack of research about individuals' perceptions of their experiences with OCD (Keyes et al., 2018; Knapton, 2016). The research continues to call for more studies to be conducted on OCD, especially due to the treatment-resistant nature of some cases (Gershkovich et al., 2017). Though many of these studies are from a pharmacological perspective, understanding the nuances of lived experiences could help clinicians tailor treatment strategies to each individual patient. Studying the subjective written experiences of individuals with autogenous and reactive OCD could benefit current practices by creating better understanding of the functions that obsessions and compulsions serve. Additionally, understanding the unique psychological processes and emotional reactions of the subtypes of OCD could add nuances to treatment by targeting the sources of the distress.

The language used by individuals with OCD has not been studied quantitatively outside of two corpus linguistic studies that looked at sexual orientation OCD (SO-OCD; Coimbra-Gomes, 2020; Coimbra-Gomes & Motschenbacher, 2019). Knapton (2016), in a qualitative study using the autogenous-reactive model, looked at individuals' experiences with OCD and noted the diverse inter- and intra-individual variations of symptoms within the categories of autogenous

and reactive obsessions. The author recommended continued research into the heterogeneous nature of OCD to inform clinical assessments and treatment options (Knapton, 2016). Another study found that sufferers with taboo or repugnant OCD thoughts were not associated with impairment in certain areas of their lives, as opposed to individuals with contamination OCD, who had clear associations with impairments in health-related quality of life (QoL). This demonstrates how aggressive, blasphemous, and sexual obsessions vary and that more research is needed to understand the subjective experiences of lesser-known types of OCD, many of which carry shame and stigma (Schwartzman et al., 2017). Furthermore, Tausczik and Pennebaker (2010) have discussed the emotional tone and cognitive styles of these individual differences as they are reflected in linguistic processes. However, there is a lack of research about the language of mental health disorders.

In a review of the academic literature on OCD, five key themes emerged: (a) key OCD terms, (b) a cognitive process model to categorize OCD subtypes, (c) the role of metacognitions in individuals with OCD, (d) the psychological processes of OCD, and (e) the linguistic processes of OCD. In this study, these themes are discussed. Then the research questions guiding the study are detailed.

Knowledge of two terms in particular is essential for a clear understanding of OCD research; these terms describe obsessions that differ from those related to contamination and checking (Sheikhmoonesi et al., 2014; Williams et al., 2017). One subtype of obsession, which has been researched and conceptualized, is *repugnant obsessions* (Moulding et al., 2014). Repugnant obsessions are described as forbidden, taboo, or unacceptable thoughts (Moulding et al., 2014) that relate to distressing impulses or images about sex, religion, harm, or aggression (Purdon, 2004). A specific subtype of repugnant obsessions commonly used in diagnosing and treating OCD is *scrupulosity*. Scrupulosity has been characterized as an obsession related to moral or religious issues that are accompanied by compulsions that cause distress and impairment (Miller & Hedges, 2008). Understanding the terms repugnant obsessions and scrupulosity is essential for building a full clinical picture of OCD; these variations have been conceptualized and researched according to the underlying cognitive processes.

A cognitive process model is helpful in understanding the diversity of obsessions that can manifest in individuals with OCD, as it delineates differences between stimuli, thought content, and subsequent thought processes. Lee and Kwon (2003) proposed a model that categorized obsessions as either reactive or autogenous. Reactive obsessions are triggered by external stimuli, such as when an individual touches a public door and in response experiences obsessions about contamination and getting ill from the germs. These types of obsessions can also relate to obsessions of order, symmetry, or making a mistake. Autogenous obsessions tend to deal with more repugnant obsessions, and they are experienced without a triggering event or stimuli. These obsessions also tend to be experienced as ego-dystonic due to their sexual, aggressive, or forbidden nature (Lee et al., 2005; Lee & Kwon, 2003).

The cognitive processes underlying obsessions vary, not only by how they are evoked and their content, but by how individuals think about them afterwards. Individuals with autogenous obsessions tend to try to control their thoughts due to their taboo nature, and they engage in more cognitive avoidance strategies, such as distracting themselves or avoiding thinking about a topic. Reactive obsessions are conceptualized as being dealt with in a more confrontational way, as individuals believe that by doing a ritual, they can prevent the harmful outcome of the obsession's threat (Lee & Kwon, 2003). One study using the cognitive process model of OCD, which shows the importance of studying how individuals with OCD think about their symptoms and how cognitions vary between the subtypes, found support for the differentiation between the subtypes (Moulding et al., 2007).

The role of metacognition in OCD is important with regard to the subjective experiences of individuals with autogenous or reactive obsessions. Generally, individuals with reactive obsessions think about external harm and fear negative consequences stemming from their thoughts, whereas individuals with autogenous obsessions tend to make negative inferences about their own character and judge themselves for their repugnant thoughts (Keles Altun et al., 2017). Reactive obsessions are also related to an inflated sense of responsibility (Keles Altun et al., 2017; Siev et al., 2011), while autogenous obsessions are related more to individuals' appraisals of thoughts and metacognitive beliefs, such as thought-action fusion (Belloch et al., 2006; Solem et al., 2009). Individuals with autogenous obsessions also think much more about the meaning of having these forbidden thoughts and needing to have control over the thoughts (Belloch et al., 2006; Keles Altun et al., 2017; Siev et al., 2011). Meanwhile, the scrupulosity subtype of OCD was found to have metacognitive characteristics of both reactive and autogenous obsessions: the responsibility and threat appraisals of reactive obsessions and the beliefs about the importance and control of thoughts of autogenous obsessions (Siev et al., 2011). Metacognitions about obsessions are closely related to the psychological processes and emotions of individuals with OCD.

The psychological processes of OCD are similar across the subtypes. Anxiety is a hallmark of both autogenous and reactive OCD. In addition, co-morbid depression has been found to be common in individuals with OCD and related to poorer responses to treatment (Overbeek et al., 2002; Yap et al., 2012). Depression in individuals with aggressive obsessions has been found to predict suicidal ideation (Balci & Sevincok, 2010). Obsessions have also been found to cause negative self-inferences and feelings of guilt in both types (Seo & Kweon, 2013).

Another consistent psychological process this study revealed was self-punishment, which often led to hypervigilance around obsessions and exacerbated symptoms (Jacoby et al., 2016). In particular, individuals experiencing autogenous obsessions tended to make more efforts to neutralize their self-worth (Seo & Kwon, 2013) and conceal their thoughts from others (Belloch et al., 2006). Obsessions were also associated with shame and embarrassment when they had a

repugnant nature (Siev et al., 2011). The findings about reactive obsessions highlight the role that shame plays in the QoL of individuals with OCD, particularly with regard to contamination fears and being able to enjoy social and sexual relationships (Schwartzman et al., 2017).

Guilt is a clinical feature of OCD that has been understood as an important concept in its phenomenology. Indeed, a review of 14 articles specifically studying guilt in OCD showed the prominence of guilt as a psychological process of OCD. Individuals experienced guilt as a result of their OCD symptoms, which also exacerbated their existing trait-guilt (Shapiro & Stewart, 2011). Researchers are now focusing on guilt as a psychological process directly related to OCD. Individuals not only experience guilt about their obsessions, they also start to fear the guilt, as it drives the motivation to punish themselves to prevent harm from coming to themselves and others (Chiang et al., 2016). The role of guilt sensitivity has also been shown to predict checking-related OCD (Melli et al., 2017). Language-use analyses could provide understanding for the subjective psychological experiences of individuals with OCD.

There are linguistic processes that are characteristic of individuals speaking about their OCD symptoms. A Language Inquiry and Word Count (LIWC) study looked at the language of individuals utilizing online discussion forums for major depressive disorder (MDD), generalized anxiety disorder (GAD), borderline personality disorder (BPD), OCD, and schizophrenia and found there were higher frequencies of singular personal pronouns and negative emotions in individuals with mental health disorders compared to the control group. Moreover, the frequency of anxiety-word use was significantly higher in individuals with OCD than the MDD, BPD, and control groups (Lyons et al., 2018).

More specific to the hallmark symptoms of OCD, which include doubt, uncertainty, and catastrophizing, is the use of conditional constructions. This manifests as the worry that if an individual has a thought but does not complete a compulsion, something bad will happen (Abramowitz & Jacoby, 2014). A linguistic analysis of spoken testimonials in individuals with OCD found the use of “if” occurred 156 times across 12 different testimonials (Hartman, 2018). Contrast was also found to be used in language about OCD, as symptoms are often ego-dystonic and stem from anxiety, not rational thought. This can be seen through the use of contrasting subjective reality with what is a forced counterfactual reality, such as “I don’t want to be a bad person but my brain is telling me I’m a monster” and by establishing balance by counteracting a distressing thought through the use of compulsive thoughts and behaviors (Hartman, 2018). This is consistent with the neutralizing effects of rituals done to establish balance and lower anxiety in people with OCD.

Six research questions guided this study. These questions were:

RQ1 What is the use rate of linguistic processes for individuals with reactive obsessions?

- RQ2** What is the use rate of psychological processes for individuals with reactive obsessions?
- RQ3** What is the use rate of linguistic processes for individuals with autogenous obsessions?
- RQ4** What is the use rate of psychological processes for individuals with autogenous obsessions?
- RQ5** How do the use rates of linguistic processes differ for individuals with reactive obsessions compared to those with autogenous obsessions?
- RQ6** How do the use rates of psychological processes differ for individuals with reactive obsessions compared to those with autogenous obsessions?

Method

Design

This study used a synchronic corpus linguistic design with 19 variables. The linguistic process variables were first-person singular, first-person plural, third-person singular, and third-person plural. The psychological process variables were negative emotions, anger, anxiety, insight, causation, certainty, risk, religion, swear words, body, health, sexual, discrepancy, future, and death. The forms of OCD variables were autogenous and reactive. The unit of analysis was words (tokens).

To determine the sample needed for adequate power, a priori analysis was done via G*Power (Faul et al., 2009). The statistical analysis involved a χ^2 test derivative, thus the effect size needed for input was Cohen's w (Johnston et al., 2006). The effect size was the average of Cohen's w in a research study on anxiety disorders (Hong et al., 2020). The input parameters were as follows: (a) test family- χ^2 tests; (b) statistical goodness-of-fit tests: contingency tables; (c) type of power analysis- a priori: compute required sample size- given α , power, and effect size; (d) $w = 0.31$; (e) power ($1 - \beta$ error probability) = 0.90; (f) $\alpha = 0.01$; and (g) degrees of freedom (Df) = 1. The output parameters were a sample size of 155 with an actual power of 0.90.

Corpus

Scope, Register, and Sources

This study explored the language used by individuals who participated in online forums about their symptoms of OCD. Therefore, I searched public posts by individuals on Reddit Application Programming Interface (API). These individuals posted about the following: reactive OCD (symmetry, ordering, checking, and contamination) or autogenous OCD ("forbidden thoughts," such as harm OCD, scrupulosity OCD, sexual thoughts OCD, pedophilia OCD, and responsibility OCD). Reddit is a public forum that allows users to post anonymously

and receive feedback and responses. The subreddit r/OCD allows users to post about their OCD experiences and to reply to community members' posts. Reddit API was instructed to search for posts from individuals experiencing intrusive thoughts. The keywords used were: contamination OCD, counting OCD, ordering OCD, symmetry OCD, checking OCD, scrupulosity OCD, sexual orientation OCD, pedophilia OCD, POCD, harm OCD, HOCD, sexual thoughts OCD, sexual OCD. The counts for the results for these searches were: 2,859, 818, 88, 255, 3484, 18,293, 286, 395, 4,775, 3,585, 2,739, 2,409, and 3,737, respectively. The total number of posts scraped was 43,723. I categorized them into the autogenous and reactive subtypes to construct the corpora. The posts were collected on January 25, 2021, going back to the first post available on Reddit. The total word count for posts about autogenous obsessive thoughts subcorpus was 18,264,102, and the total word count for reactive obsessive thoughts subcorpus was 11,712,639.

Preprocessing

The corpus was created using Python Reddit API Wrapper package. The posts about OCD were publicly accessible and anonymously published without any identifiable information. Text that greeted users or asked for advice at the end were excluded, and only the body of the text that included the user's subjective experience of OCD was used. Tokenization took the corpora and divided them into individual words before processing using Python. The two corpora were also preprocessed to check for non-standard orthography, including typing and spelling errors. Due to the possibility that the same Reddit post may have shown up in multiple searches, duplicate entries were deleted from the corpus.

Measures

The measures used were selected scales from the LIWC dictionary (Pennebaker et al., 2015). The scales chosen for this study were related to symptoms of OCD and the unique manifestations of its various subtypes. For example, religion was chosen as a linguistic scale because of its relevance to scrupulosity OCD. The psychometric properties of LIWC, including its internal reliability and external validity, have been reported by its authors (Pennebaker et al., 2015).

LIWC Linguistic Processes

The linguistic-process scales chosen for this study included first-person singular, first-person plural, third-person singular, and third-person plural. Analyzing these pronouns provided information about the attentional focus of the individuals writing the blog posts, as well as how they were processing the experience of living with OCD. Individuals experiencing emotional pain are more likely to use first-person pronouns because they are drawn into their own experiences (Rude et al., 2004).

LIWC Psychological Processes

The 15 scales selected were negative emotions (e.g., sad), anger (e.g., mad), anxiety (e.g., nervous), insight (e.g., know), causation (e.g., effect), certainty (e.g., never), risk (e.g., doubt),

religion (e.g., church), swear words, body (e.g., ache), health (e.g., pill), sexual (e.g., incest), discrepancy (e.g., should), future (e.g., soon), and death (e.g., kill).

Apparatus

This study used the latest version of LIWC (LIWC2015) to analyze the corpus (Pennebaker et al., 2015). LIWC is a closed dictionary text analysis application that can produce results about various components in a written text, such as emotional and cognitive words. The output includes summary variables and the hierarchical categories associated with each word. For example, many individuals living with OCD have comorbid depression; LIWC would be able to analyze any words associated with sadness and categorize them as a negative emotion, which is considered an affective process.

Statistical Analysis

RQs 1-4 are descriptive in nature and both raw word count and a normalized word count will be reported for each subcorpus. RQs 5-6 are inferential in nature examining for differences in the proportions. As such, the log-likelihood ratio test (G^2) was used. The effect size to be reported was the Bayesian information criterion (BIC), with the BIC strength descriptors from Fabozzi et al. (2014). Given the large number of comparisons planned, a family wise error rate of $p < 0.01$ was employed. R was used for all analyses.

Results

The results for the first four research questions (descriptive statistical analysis) can be found in Table 2.1. The most frequently used linguistic variable in both the autogenous and reactive corpuses was first person singular. In terms of RQs 5-6 (inferential statistical analysis), the psychological variables of insight and sexual had the strongest keyness in the autogenous corpus, and health and body had the strongest keyness in the reactive corpus. Complete keyness findings can be reviewed in Table 2.2. Supplemental results including proportional data can be found on this research project's Open Science Foundation website (<https://osf.io/9uigt>).

Discussion

This study explored linguistic and psychological processes in online forum posts of individuals with autogenous and reactive types of OCD. RQs 1-4 examined use rates of linguistic and psychological processes amongst the two OCD subtypes. RQs 5-6 explored linguistic and psychological process differences between the two OCD subtypes. The obtained results will be addressed to the research question in order.

In terms of RQ1 and RQ 3 (linguistic usage rates), what stands out is the statistical and effect size findings regarding the first personal singular in both subcorpuses. There exist two probable reasons for this obtained result. The first reason is that the use of the first-personal

singular pronoun (I, me, my) is shown to be an indicator of mental health distress (Lyons et al., 2018; Tausczik & Pennebaker, 2010). The use of online forums by individuals with OCD expresses the subjective distress and anxiety that they are experiencing, thus frequently using the first-person singular pronouns. The second reason for this result is that users posting in the r/OCD subreddit may be exhibiting social withdrawal due to their anxiety disorder and are less likely to utilize third-person pronouns. Reddit users tend to be more conversational in neutral forums compared to anxiety forums, where they are less likely to ask questions or thank other posters (Ireland & Iserman, 2018). The most probable reason for the sizeable effect size of the first-person singular pronoun in both the autogenous and reactive corpuses is that individuals seeking out the specific r/OCD subreddit are looking to find an outlet and subsequent support from other OCD sufferers pertaining to their symptoms. The use of “I,” “me,” and “my” conveys their experiences and requires self-disclosure.

RQ 2 looked at the use rate of psychological processes in the reactive corpus. The most frequently used variables were insight and health. There are a few probable reasons for these results. The first reason is that epidemiologically, the health variable relates directly to contamination, which is one of the most frequent types of reported obsessions (Bhikram et al., 2017). The second reason for the result is that psychologically, disgust plays a large role in experiencing contamination obsessions. The heightened experience of disgust is related to heightened threat appraisals. This leads to more exaggerated fears which may then lead individuals to seek out support on Reddit to assuage their anxiety (Bikhram et al., 2017; Cisler et al., 2010). Lee and Kwon’s (2003) research shows that though individuals with reactive obsessions tend to perceive the threat from their obsessions as being realistic or plausible, they also have insight that their reactions are excessive. Given the communal nature of online forums such as Reddit, it is probable that individuals who post about their OCD symptoms relating to health are seeking distress reassurance for the risk and fear that they attach to their obsessions despite the insight they possess about these thoughts being caused by OCD.

RQ 4 looked at the use rate of psychological processes in the autogenous corpus. Insight was the most frequently used psychological variable in the autogenous corpus. A likely explanation for this finding is that individuals with autogenous obsessions were found to have higher ratings on importance of thought. Because the nature of their obsessions is perceived as immoral or unacceptable, sufferers tend to spend more time ruminating about the thoughts and attempting to control them (Lee & Kwon, 2001). The LIWC insight variable includes words such as “think” or “know” (Pennebaker et al., 2010), and this would reflect an attempt on the individual’s part to reassure themselves that their thoughts are not reflective of their values or moral character. Fergus (2013), in particular, found support for the notion that autogenous obsessions cannot be assuaged by modifying the environment like autogenous obsessions can by washing and cleaning ad infinitum. The only way to neutralize the anxiety from the obsessions was to engage in covert rituals such as thought control, which would explain the high frequency of using insight variables in the autogenous corpus. It seems very likely that individuals with

repugnant obsessions regarding sex, harm, and religion would make much effort to distance themselves from these intrusive thoughts by engaging in cognitive mitigation strategies to convince themselves that they are not actually capable of these acts.

In terms of RQ 5, which looked at the differences in use rates of linguistic processes, first-person singular in the autogenous corpus had a large effect size. Though both corpuses had frequent use of the first-person singular pronoun, it is probable that the observed proportion in the autogenous corpus was significantly larger because taboo and repugnant thoughts lead to increased levels of subjective distress. These types of thoughts increase self-conscious emotional reactivity of feelings such as shame and guilt. Additionally, the conflict between the individual's value system and the nature of the repugnant thoughts also leads to greater emotional distress (Berman et al., 2020). As previously discussed, first-person singular pronouns indicate mental health distress (Lyons et al., 2018; Tausczik & Pennebaker, 2010). Because individuals with autogenous obsessions experience increased self-conscious emotions which are linked to higher emotional reactivity, it would make sense that there is a higher use of first-person pronouns in the autogenous corpus.

In terms of RQ 6 which looked at the differences in use rates of psychological processes, the variable for sexual had the strongest keyness in the autogenous corpus. A likely explanation for this is that repugnant obsessions regarding sex have been found to be ego-dystonic in its sufferers. This causes anxiety and guilt because though they realize these thoughts are not aligned with their values and intent, they still cause a great deal of distress. Autogenous obsessions are more likely to cause the individual to ruminate about the meaning of having these types of repugnant obsessions (Lee & Kwon; Williams et al., 2015). The second explanation for why sexual obsessions may have been the most commonly reported type of autogenous obsession in the corpus, as opposed to religious or aggressive obsessions, is because of the extremely taboo nature of pedophilia, incest, sexual harm, or abuse. Individuals fear their symptoms may be misunderstood as actual intent to harm others and may be subject to risk assessments and mandated reporting by the therapist (Veale et al., 2018). Mental health clinicians often misdiagnose OCD, especially when there are sexual obsessions about pedophilia and sexual orientation (Glazier et al., 2013). The sexual psychological variable most likely was the variable with the strongest keyness in the autogenous corpus due to the taboo nature of sexual obsessions and the accompanying shame and guilt that individuals experience, as well as the realistic fears of being reported or facing legal consequences for sharing the symptoms that they perceive as threatening. However, one of the hallmarks of OCD is uncertainty, which makes sharing symptoms with a clinician even more challenging, as they may know they would never act on them, but the uncertainty of OCD makes them fear that they may actually be capable of causing harm to others.

The health and body variables had the strongest keyness in the reactive corpus. A probable reason for this is that contamination obsessions address health and bodily concerns due

to the fear of germs, dirtiness, and contracting/spreading an illness from bodily fluids and environmental contaminants (Lee & Kwon, 2003). The subsequent compulsions are frequent handwashing, showering, and cleansing the body. Checking, symmetry, and repeating compulsions also fall under reactive obsessions, and they frequently include checking the body for signs of illness. Though the variable for body is also frequently used in the autogenous corpus to probably discuss sexual obsessions and the monitoring of bodily responses to these thoughts, the significant effect size of this variable in the reactive corpus supports previous research that germ aversion and excessive hand washing are hallmarks of contamination OCD (Brady et al., 2021; Vickers et al., 2017). The health variable could very well be representative of the obsessions, and the body variable could be representative of the performed compulsions that are meant to neutralize the threat of the obsessions.

There were three limitations for this study. The first limitation is that while LIWC is able to categorize words into variable categories, there are lexical ambiguities that may not be detected. Because the unit of analysis was tokens, the context of the categorized words was not taken into consideration which could change the psychological tone of the word. The second limitation is that posts were scraped only from Reddit. There are many other sources of online support specifically created for individuals with OCD that were not included in this study. The last limitation is that because the sample scraped from Reddit was anonymous and did not include any information about the individuals posting in the forums, the results are not generalizable to any broad population.

There are several implications for counselors and other clinicians. The first is that there is a clear distinction between the autogenous and reactive subtypes of OCD, and the results of this LIWC study supports the model of OCD set forth by Lee and Kwon (2003). Training counselors in diagnosis and assessment must include the heterogeneous nature of OCD and encompass the various presentations of obsessions. Another implication for practice relates to the fact that individuals with autogenous obsessions tend to place great importance on the meaning of the thoughts that they are experiencing and tend to ruminate about their values, character, and morals. Thus, practitioners must recognize this added level of distress that individuals experience and implement ERP treatment that acknowledges the nuances of autogenous obsessions. Clinicians must be cautious to not provide reassurance about the nature of the obsessions, as this reinforces the cognitive cycle of obsessions, while still providing emotional support for psychological distress. The high frequency of insight in both the autogenous and reactive corpus translates to clinical practice, in that clinicians will most likely not be working with clients with overvalued ideation or even delusional beliefs, so the ERP treatment can be tailored to be more or less aggressive according to how ready the client feels to engage in exposures. Lastly, the use of first-person singular pronouns and expressions of distress found in both the reactive and autogenous corpus indicate high levels of mental health distress. Individuals seeking support on online forums may be similar to individuals in treatment who engage in constant reassurance-seeking. These behaviors could reinforce the social isolation they

experience because friends and family members could become tired of providing reassurance. Clinicians could draw from the treatment approach of depression by Klerman (1984) to integrate interpersonal techniques to improve their relationships and social functioning.

There are several implications for future research drawn from this study. First, this corpus linguistics study was limited to Reddit posts, whereas many other blogs, forums, and websites containing experiences of individuals with OCD exist. Studying these additional sources could provide more insight into subjective experiences of autogenous and reactive obsessions. Future research could also explore the specific themes of obsessions that fall under these subtypes. There have been a few corpus linguistics done on sexual orientation OCD (SO-OCD), but the other types of obsessions have not been studied on their own. Additional linguistic studies can also contribute to the existing body of literature about autogenous and reactive obsessions by focusing on specific psychological variables that have been identified as being hallmarks of these obsessions such as disgust, guilt, and responsibility (Shapiro & Stewart, 2011). Lastly, previous research has shown higher levels of emotional distress and suicidality in individuals with autogenous obsessions. A corpus linguistic study looking at the language of suicidality in OCD posts could shed light on how clinicians could effectively target the core of what may drive individuals who have OCD to die by suicide.

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Table 2.1*Results for RQs 1-4*

Category	Variable	Autogenous		Reactive	
		Raw Count	Norm. Count	Raw Count	Norm. Count
Linguistic	1 ps singular	381,775	106,300	227,024	99,400
Linguistic	1 st ppl	7,182	2,000	4,796	2,100
Linguistic	3 rd ps	32,682	9,100	18,499	8,100
Linguistic	3rd pp	21,548	6,000	13,018	5,700
Psychological	anger	27,654	7,700	13,703	6,000
Psychological	anxiety	56,027	15,600	33,117	14,500
Psychological	body	29,091	8,100	22,154	9,700
Psychological	cause	68,956	19,200	45,222	19,800
Psychological	certain	63,928	17,800	41,796	18,300
Psychological	death	6,823	1,900	2,969	1,300
Psychological	discrep.	72,189	20,100	43,623	19,100
Psychological	future	36,633	10,200	24,438	10,700
Psychological	health	58,182	16,200	47,734	20,900
Psychological	insight	152,638	42,600	79,938	35,000
Psychological	religion	7,182	2,000	4,111	1,800
Psychological	risk	27,654	7,700	18,728	8,200
Psychological	negemo	143,659	40,000	78,796	34,500
Psychological	sexual	34,478	9,600	7,537	3,300
Psychological	swear	10,415	2,900	4,567	2,000

Table 2.2*Results for RQs 5-6*

Cat.	Variable	Autogenous Raw Ct.	Reactive Raw Ct.	G^2	BIC	BIC Description
Psy	sexual	34,478	7,537	8651.1	8635.51	Very Strong
Psy	insight	152,638	79,938	2015.36	1999.77	Very Strong
Psy	health	58,182	1426	1682.94	1667.36	Very Strong
Psy	negemo	143,659	78,796	1128.62	1113.03	Very Strong
Ling	1 st ps	535	605	644.79	629.20	Very Strong
Psy	anger	1826	1367	585.16	569.58	Very Strong
Psy	swear	575	401	457.98	442.39	Very Strong
Psy	body	2059	1755	404.83	389.25	Very Strong
Psy	death	444	335	311.67	296.08	Very Strong
Ling	3 rd ps	447	348	161.73	146.15	Strong
Psy	anxiety	372	289	111.97	96.38	Strong

Note. $p < .01$, adjusted error rate = .002778, $Df = 1$, critical value = 8.95