

Articles on depression in American medical websites: an analysis based on appraisal theory

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Abstract. The perfection of medical information system, the expertise and credibility of its contents are of great importance since an increasing number of people rely on online medical information. Based on Appraisal Theory, this paper selected 14 online medical articles on depression (abbreviated as OMDD) from four American medical websites (APS, Mayo Clinic, WebMD, and Everyday Health), describing the distribution of the Appraisal resources and analysing the interaction between article writers and its putative readers. The paper finds that WebMD uses many Concur resources and rhetorical questions to predict the putative readers' "likemindedness" with the writers. Mayo Clinic's introduction to depression includes a lot of Dialogistic Expansive resources, suggesting that readers are "persuadable". Everyday Health persuades readers to accept certain treatment though describing the writers' own feelings and introducing the voice of doctors. APS employs Attributive resources to provide readers with the latest research achievements so as to encourage them to conduct further research. The articles of the four websites adopt different Appraisal strategies to realize their interpersonal meanings, which provides reference for other health communication platforms.

1 Introduction

With the improvement of living standards, the public have become increasingly health-conscious, and their demand for health information is more and more pressing. In recent years, mobile devices and social applications have become the main media of health communication, bringing not only opportunities, but new challenges [1]. Some scholars believe that new media, to some extent, hinders the public to obtain health information and fails to promote the occurrence of healthy behaviours and the improvement of doctor-patient relationship [2][3]. Both the studies on health communication and new media technology have originated in the United States [4]. The online medical information system in the United States is relatively complete: academic groups, medical institutions and non-governmental organizations share medical information on their websites. The articles are written or reviewed by professional physicians to guarantee the specialty and credibility.

According to the WHO report, by 2030, Major depressive disorder will become the largest burden of disease in the world. Major depression disorder is a common mental illness characterized by persistent depression, loss of interest, and slow thinking [5]. It is hard to be

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distinguished from temporary sadness or dejection without complete history-taking and detailed psychiatric examination [5]. Thus, this paper selects online medical discourse on depression (abbreviated as OMDD) as data, to explore the ways that depression medical information is presented.

This paper is aiming at analyzing Appraisal resources in online medical discourse on depression from APS, Mayo Clinic, WebMD and Everyday Health. It is supposed to answer the following questions: (1) Are there any differences of appraisal resource distribution among OMDD from different websites? (2) What appraisal strategies do writers employ to realize the interaction between the writers of OMDD with their putative readers?

2 Health communication discourse analysis

The widely accepted definition of health communication is from Rogers, an American communication researcher. According to Rogers [6][7], any type of human communication that involves health is health communication, such as disease prevention, drug abuse prevention, doctor-patient relationship research, family planning, early detection of cancer and smoking cessation. The study on patient-provider communication is the earliest field of health communication. From 1989 to 2003, the study on patient-physician communication has remained at the top of all fields of health communication [8]. With the rise of the Internet, online health counselling and public education provide abundant data for discourse analysis. Scholars focus on the analysis of patient-provider interaction discourse, while the discussion about health education discourse from professional is relatively deficient. Udvardi [9] believes that combining linguistics with health communication research helps to develop effective communication training materials and promote its communication effectiveness. Therefore, online medical discourses written by professionals deserve the attention of linguists.

3 Theoretical framework

3.1 Appraisal theory

Halliday [10] comes up with three meta-functions of language: ideational, interpersonal, and textual function. Appraisal theory is a further extension of SFL, which focusing on interpersonal meaning within systemic-functional linguistics. Martin & White [11] introduce Appraisal Theory comprehensively and systematically, marking the maturity of Appraisal Theory. Three major domains of Appraisal are presented: Attitude, Engagement and Graduation [11].

Attitude is the central area in Appraisal System, revealing the writer's feelings. Engagement deals with sourcing attitudes and the play of voices around opinions in discourse. Graduation resources are used to strengthen or weaken writers' feelings and attitudes and modify rhetoric effects. The three categories are further divided into sub-categories.

3.2 Putative reader

In recent years, White pays more attention to object research, expands the construction of identity discourse in Appraisal system research, and shifts from the perspective of discourse production to the perspective of discourse reception. White's two papers about putative reader [12][13] shows how the writer projects values, expectations, and attitudes to the putative readers, and proves the applicability of putative reader framework, in which readers are construed as "likeminded", "uncommitted" and "unlikeminded". The empirical analysis

[12][13] provides theoretical framework, which helps to explore the process from discourse production to discourse acceptance, and further discuss the social and cultural context of online medical discourse.

4 Methodology

4.1 Data collection

Fourteen OMDD from four medical websites have been chosen as data: seven articles from Association for Psychological Science (4,507 words), one general introduction of depression from Mayo Clinic (4,516 words), four from WebMD (3,754 words) and two from Everyday Health (3,883 words).

The articles from each website have a unique style, and are written or reviewed by doctors or other health professionals. For this reason, the quality of data should be relatively high. To ensure the quantity of data sources, articles selected from each website are about 4000 words.

4.2 Data analysis

This paper has adopted both qualitative methods and quantitative methods. Qualitative method is applied to analyse Appraisal resources in texts within the framework of Appraisal Theory. UAM Corpus Tool 6 is applied to annotate the corpus manually and present the statistic distribution features of OMDD. The analytical framework is presented in Figure 1.

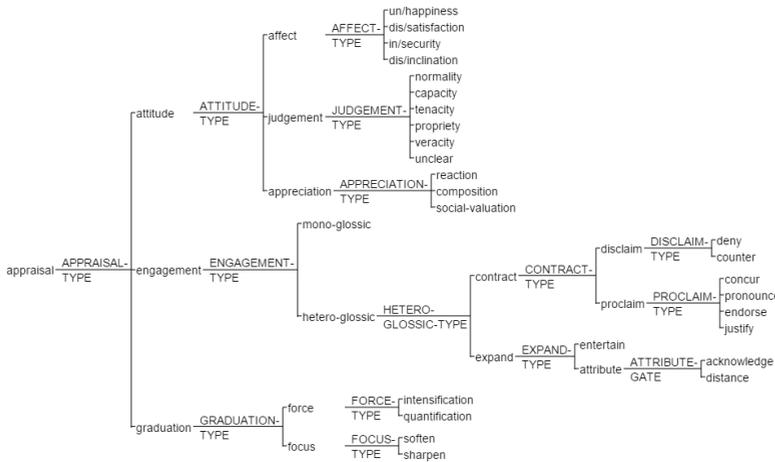


Fig. 1. Analytical framework.

The distribution of appraisal resources among OMDD from different websites has been compared, so as to discuss the anticipated images that writers of different websites have and to reveal the Appraisal strategies that OMDD writers employ to achieve certain interpersonal function.

5 Appraisal resources in OMDD

In the OMDD collected for this study, a total of 496 Attitude resources, 830 Engagement resources and 721 Graduation resources are found.

Table 1. Appraisal Resources Employed in OMDD.

	Attitude	Engagement	Graduation
APS	98	232	244
Mayo Clinic	123	226	154
WebMD	142	240	149
Everyday Health	133	132	174

5.1 Attitude resources in OMDD

Attitude resources play an important role in helping writers align readers who would be more likely to accept their own evaluations. A total of 105 Affect resources, 195 Judgement resources and 196 Appreciation resources are found. Table 2 shows the distribution of subcategories in the OMDD from different websites.

Table 2. Attitude resources employed in OMDD.

Attitude	Subcategories	APS	Mayo Clinic	WebMD	Everyday Health
Attitude	Inclination	2	2	3	9
	Happiness	9	10	11	14
	Satisfaction	4	11	4	1
	Security	8	14	7	18
Judgement	Normality	0	8	10	13
	Capacity	15	9	4	20
	Tenacity	2	2	1	9
	Veracity	0	0	1	1
	Propriety	11	41	38	10
Appreciation	Reaction	7	13	30	10
	Composition	12	8	4	7
	Valuation	28	27	29	21

Writers of OMDD tend to use adjectives to describe patients' possible physical and mental condition, such as hopeless, nervous, anxious, or the possible outcome of a certain treatment to help readers determine whether their situations conform to the writers' account, and then to decide whether they need to start or terminate certain treatments.

Ex. 5-1: But if you feel hopeless[-security], teary[-happiness], or “empty[-security]” every day for more than 2 weeks ... it may be clinical depression. (WebMD)

Capacity resources take a greater weight because OMDD from the four websites involve various judgments about the physical condition of patients and competency of objects under evaluation. With the help of Capacity resources, readers can do self-diagnosis and further understand depression.

Ex.5-2: Depression can make you feel too tired or weak to wash the dishes [-capacity] -- or even get dressed. (WebMD)

Adjectives about right and wrong, imperative sentences and modal auxiliaries (i.e. should) are frequently used to express the meaning of commands, requirements, requests and persuasions in the OMDD. In this way, readers can know what is the right thing to do.

Ex.5-3: Anyone taking an antidepressant should [+property] ... (Mayo Clinic)

The writers' evaluation to symptoms could arouse the readers' agreement; their evaluations to medication, treatments would prepare readers for the possible side effects and unpleasant outcomes.

Ex 5-4: Sometimes your pet really can be your best friend, and that’s good[+valuation] therapy. ...Still, you could have unpleasant [-reaction] symptoms if you... (WebMD)

“You” is frequently used in the OMDD, which seems that writers(doctors) are face to face talking with readers(patients). Besides, writers express their likes and dislikes directly or indirectly showing that they put themselves in readers’ shoes, which could make readers furtherly accept their advices.

5.2 Engagement resources in OMDD

Engagement can be further divided into Monogloss and Heterogloss. As the employment of Heterogloss resources for alternative voices is a critical feature of discourses shared with the mass public, this section will mainly discuss it. The distribution of engagement resources is listed in Table 3.

Table 3. Engagement Resources Employed in OMDD.

	Subcategories	APS	Mayo Clinic	WebMD	Everyday Health
Contract	Deny	34	35	34	24
	Counter	30	24	31	25
	Concur	7	1	2	9
	Pronounce	0	1	1	3
	Endorse	31	1	11	2
Expand	Entertain	83	162	161	47
	Acknowledge	47	2	6	22
	Distance	0	0	0	0

Dialogic Expansion allows writers of OMDD to tolerate different opinions or voices as they cannot make a definite diagnosis without asking patients various questions.

Ex.5-5: Sometimes [entertain] I would have breakthrough episodes. (Everyday Health)

Ex.5-6: Researchers [acknowledgement] think it’s the literal “outside” focus that can[entertain] bust a mental funk by... (WebMD)

According to research in Clinical Psychological Science [acknowledgement], (APS)

OMDD from the four websites is for everybody. Each patient is so different, every treatment so tailored, so no certain conclusion can be easily drawn. Hence, OMDD writers prefer to use Entertain resources, especially words indicating probability and frequency, to admit other viewpoints and to expand dialogic space and to make articles more open and tolerant. The writer’s voice is just one of many possible choices. By using Acknowledgement resources, dialogic space for alternative positions or values can be opened up and alignment can be established with readers.

When Dialogic Contraction is employed, other views and negated or denied, meaning that discursive space is cut down.

Ex.5-7: There is no doubt that [concur] fathers are a critical part of a healthy pregnancy, (APS)

Ex.5-8: More than just [counter] a bout of the blues, depression isn’t [deny] a weakness and you can’t [deny] simply “snap out” of it. (Mayo Clinic)

Readers may wonder, are fathers play an important role in healthy pregnancy? Can people get rid of depression as shake off a bad mood? Readers have no opportunity to ask these questions because the authors have given categorical answers with “There is no doubt” and “not”. Narrowing down the dialogic space can align readers into the value position being advanced by the writer and make readers clearer about depression.

5.3 Graduation resources in OMDD

Writers usually takes semantic value as a means of persuasion: the high value graduation resources are used to highlight one aspect of the event, while the low value graduation resources are used to weaken other aspects of the event, so as to draw the readers' attention to where the writer wants them to go.

Ex.5-9: This requires patience, as some [force] medications need several [force] weeks or longer to take full effect and for side effects to ease as your body adjusts. (Mayo Clinic)

Ex.5-10: Perfectionism can push students to achieve their best, the researchers grant [force + acknowledge], but... (APS)

In OMDD, focus resources are extensively used to describe the degree of symptoms, their impact on life, and the degree to which writers agree with a proposition. Focus resources, i.e. ungradable words expressing attitudinal meaning, help arouse readers' attention to the certain vulnerable groups or time periods of depression.

6 Putative readers of OMDD

White has expanded the construction of identity discourse in Appraisal System research, and shifts from the perspective of discourse production to the perspective of discourse reception. His putative reader framework focuses on the role of Engagement resources and construes the putative addressee as "likeminded", "uncommitted" and "unlikeminded" [13]. The following sections try to discuss the putative reader of OMDD from the four websites based on White's empirical researches in 2020 and 2021.

6.1 Construing the addressee as "likeminded"

According to White [13], "likeminded" readers agree with the beliefs, evaluations, descriptions or propositions presented by the writer.

6.1.1 WebMD: author/addressee concurrence

Among the Heteroglossic formulations which construe "likemindedness" in projecting understandings, beliefs, attitudes and expectations held by the writer on to the implied reader, the first of these involves wordings which overtly signal speaker/addressee Concurrence – for example, formulations such as of course, obviously and admittedly [12].

Ex.6-1: It doesn't have to be a spree for fancy electronics or a new designer wardrobe. Sure [concur], the something nice can perk you up for the moment. But [counter] research shows the real magic of so-called retail therapy is the sense of control you have over your environment when you make your own choices. (WebMD)

In this extract, the writer mentions the so-called retail therapy. First, the writer affirms that it can make people feel happy in the short term through concur resources, and then points its limited effect on the treatment of depression to readers through Counter resources.

Concurrence can be divided into positive Concurrence and concession Concurrence. The former is unreserved and complete; The latter is grudging and conditional [11]. Concession Concurrence is often paired with Counter resources, which make it easier for the writers to align with the readers and reach agreement with them in a certain area.

6.1.2 *WebMD: rhetorical question*

There is one more aspect of the OMDD from WebMD which also construes the addressee as “likeminded”. Rhetorical questions are questions to which no answers are required, which are treated by Martin & White [11] as part of Concurrence between addresser and addressee. According to White [13], the frequent use of rhetorical questions carries the assumptions that the addressee will align with the author in answering these pseudo-questions. OMDD writers from WebMD use a series of rhetorical questions when guide readers to self-diagnosis or self-regulation.

Ex.6-2: Do you avoid leaving the house? Does the shortest conversation feel like too much effort? ... Look for a support group. It can [entertain] help to talk to other people who know what you’re going through. (WebMD)

Here the textual logic presumes the reader would reply sayings like “No, I would like to stay at home and don’t want to talk with others”. The writers then respond to the answers and give suggestions that may be helpful—to look for a support group.

6.2 Construing the addressee as “persuadable”

“Uncommitted” readers are the addressee who may not totally agree with the writer’s sayings, but are nevertheless potentially persuadable [13].

6.2.1 *Mayo Clinic: dialogistic expansiveness*

The addressee can be construed as potentially questioning of, or resistant to, the proposition, but as nevertheless persuadable as to the proposition’s validity [12]. Dialogic expansion resources open up the space of alternative viewpoints, so even if the readers’ situation or opinion is not exactly the same as what the writer has supposed, they will not conflict with the writer.

Ex.6-3: It’s not known exactly what causes depression. As with many mental disorders, a variety of factors may be involved, such as:

Biological differences...

Brain chemistry...

..... (Mayo Clinic)

The cause of depression has not yet been determined. The causes listed by the writer may or may not correspond to the readers’ knowledge and experience about depression. Words about possibility like “appear to” and “may” can be interpreted as the speaker anticipating the possibility that the addressee may regard the proposition as problematic, as open to question. In other words, the addressee is ‘persuadable’.

6.2.2 *Everyday Health: the “persuadable” addressee*

The two writers from Everyday Health have suffered from depression, but get better after having effective treatment. Because the lack of expertise, their viewpoints are not so tenable. By taking steps to ‘convince’, the author, thereby, constructs a putative addressee who is potentially at odds with the author but may be won over to the author’s position [12].

Ex.6-4: Then my therapist She harmonized with me, which made me feel more comfortable [intensification, security], and soon I was belting out notes with a vibrato I didn’t know I had. Something deep inside my belly was resonating with my anxiety and opening up my throat. What once felt like an 8 on the throat tightness scale felt like a 4 [security]. (Everyday Health)

Ex.6-5 is the scene of her musical treatment, showing the expertise of the therapist and the writer's trust in the therapist. Writers share their treatment experience and tend to employ more Affect resources to describe their psychological state, and convince readers that their way to fight against depression is more effective. In this way, not only emotional resonance of readers (people with depression or those whose loved ones are depressed) can be invoked, but also the credibility of new treatments is improved. The readers are more likely to follow the writers' advice to take action.

6.2.3 APS: *academic exchange*

A lot of viewpoints are cited in articles from APS to make strong points to support the writers' point of view or introducing cutting-edge researches.

Ex.5-8: "If you're walking around day to day, your attention will just be drawn to certain things and you'll tend to..." [acknowledgement] said Brandon Gibb, professor of psychology at Binghamton University and director of the Mood Disorders Institute and Center for Affective Science. (APS)

The readers of APS are not only patients, patients' family members and people who want to learn about depression, but also a large number of professionals in related field. The writers need to present the research results in detail in order to arouse the interest of professional readers to study further.

6.3 Construing the addressee as "un-likeminded"

Online articles on depression mainly aims to provide readers with information to guide them in determining whether they are at risk for depression or need treatment. White notes that the authors of mass-communicative texts rarely construe an addressee who is completely at odds with them ^[12]. And "even when possible opposition is countenanced, this is nevertheless treated as surmountable, with the addressee subsequently construed as persuadable" [12].

7 Conclusions

The paper finds that OMDD use a large amount of Engagement and Graduation resources, among which Heterogloss resources could align writers with readers and Graduation resources would modulate the degree of Attitude and Engagement. Attitude resources also play an important role in helping writers align readers who would be more likely to accept their own evaluations.

Articles from WebMD offer advice and solutions to common problems in patients' lives, using many Concur resources and rhetorical questions to predict the putative readers' "likemindedness" with the writers. Mayo Clinic's introduction to depression includes a lot of Dialogistic Expansive resources, especially Entertain resources, to allow the existence of different voices, suggesting that readers may question the writers' views but are nonetheless "persuadable". The articles from Everyday Health were written by two patients who have suffered from depression and might be questioned by readers due to their lack of expertise. With the help of Attitude resources, the writers described their own feelings when fighting against depression to arouse readers' empathy. At the same time, the writers introduced the voice of doctors to persuade readers to accept certain treatment. APS has the most unique readership, mostly of which are professionals in the medical-related fields. Writers from APS employed a large number of Attributive resources to introduce external voices, providing readers with the latest research achievements so as to arouse their interests and encourage them to conduct further research on a certain topic.

The research spread the research data of Appraisal resources into the field of online medical discourses, and tried to arouse people's awareness of enriching theoretical exploration of the connections among subsystems within Appraisal Theory. The articles of the four websites adopt different Appraisal strategies to realize their interpersonal meanings, which provides reference for the development of other health communication platforms.

White's putative reader framework [12][13] centered on engagement resources. This paper tries to analyse OMDD under the original framework combined with attitude resources. Affect resources and appreciation resources employed by writers not only can help them express their feeling, but arouse a sense of identity in the uncommitted reader so as to achieve the purpose of persuasion. This paper briefly discussed the reason for its missing in OMDD while the application and practicability of "un-likemindedness" in the putative reader framework still need further discussion. It is hoped that this paper can have slight implications for further improvements and employment of Putative Reader framework.

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