Computational Linguistics and Media News: Linguistic Features and Lexical Choices with Time-frequency Statistical Analysis

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Abstract. Media has a critical role in shaping attitudes and public understanding toward mental health. The handling of news on mental health conditions in media comes with intrinsic challenges, some of which are due to the use of language. Language, lexical choices and contexts which the lexical items are attributed to can bring about different effects like stigmatizing and otherizing perceptions or trivializing severe mental health conditions. Hence, language used in media is influential, particularly in health communication which is targeted toward public with the source being represented by health communicators and journalists. In view of these aspects, the present study aims to examine the use of language in print media based on the lexical analyses, including the use of adjectives, nominalizations and connotations, based on theoretical and quantitative dimensions, which are content analysis regarding linguistic features and time-frequency statistical analysis. The dataset contains 725 newspaper articles on mental health and psychological problems, published in six different Turkish national newspapers over a six-year period. The results of the computational linguistic-based analyses belonging to the proposed model show that negative descriptions, attributions and connotations regarding people with mental health disorders outnumber the positive ones. Another aim of the study concerns whether reporting language on mental health conditions is consistent with what has been suggested by the American Psychiatric Association (APA). The results obtained reveal that some lexical choices, particularly certain adjectives and nominalized phrases used in the reporting language, are not in agreement with APA's recommendations. In brief, it has been aimed at pinpointing reporting language in journalistic practices using accurate, responsible and empathic language for mental health reporting and more balanced press coverage concerning mental problems and individuals with mental conditions. This aim can further be oriented towards other media where various genres and styles of language are used across different disciplines.

Keywords: Media Language · Computational Linguistics · Mental Health News · Mental Health Reporting · Media Texts · Linguistic Features · Stigmatizing and Derogatory Language · Lexical Choices · Lexical Variations · Journalistic Practice · Time-frequency Statistical Analysis · Observation Probability · Psycholinguistic Features · Content Analysis

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1 Introduction

Media language has been one of the most focal aspects addressed and examined in the domain of linguistics. These domains cover particularly applied linguistics that is concerned with the identification of and solution to language-related real-life problems as well as sociolinguistics which is the study of the interaction between language and society through the investigation of how language is used and how it varies in varying social contexts considering the cultural norms, context, expectations, and so forth. The interest in media language is stated to be due to the accessible feature of the media as a source of language data, its quality as a linguistic institution people are exposed to by hearing and reading on a daily basis, the interesting ways the media linguistically use language in their own right and the media's position as an important social institution [1]. Two decades before, the examination of the languages of journalism was stated to be a relatively novel phenomenon, with an interest sustained by scholars over the last three decades back then [2]. The examination of language in the context of media constitutes multiple layers, which are the formal features of language and less formal ones. While lexical (word) choice, syntax and grammar make up the former mentioned features, textual patterns, formulaic narratives and frames are considered to belong to the latter category. The progress of journalism toward complicated systems of information relay has consequently brought about the growth of journalistic language.

The fact that the system of information relay through language is multi-layered is due to the messages in journalistic contexts encoding broader messages about life beyond the actions' sequencing making up a news event [2]. Thus, the messages conveyed cannot be stated to be simplistic or transparent, and the output of reading a text yields a socially contingent and negotiated process of constructing meaning, which requires the nuanced investigation of a text's adjustment in relation to a broader context including social, political, economic, cultural and cognitive elements. These aspects of journalism languages' study with the emergence of sociolinguistics are acknowledged based on the premise that the study of language is a means of building, maintaining and mediating social relationships [3]. Along with these aspects, it is observed that language also encompasses the skills concerning the news producers that need to be possessed, some of which include but are not limited to news writing, interviewing and copy editing in line with the valued objectives of providing balance, brevity, objectivity, clarity, precision as well as accuracy [4–6]. Linguistic features characteristic of newspaper writing and functions of these linguistic features in news discourse along with the variations existing in the news writing process are other important points of analysis [7]. The syntactic and lexical features can be associated with the communicative context or situational characteristics distinguishing news discourse [8, 9]. Regarding lexical items which are common in newspaper writing, nouns frequently act as premodifiers of other nouns. Likewise, nominalizations, attributive adjectives premodifying nouns and prepositional phrases that follow the nouns are also stated to be common. Noun phrases are a basis to evaluate and label sources and news actors, allowing for a maximum packaging of meaning in minimum space possible, which is a linguistic aspect observed in news story as a whole and headlines in particular.

Language as the medium of communication plays a critical role in shaping societal attitudes, and media platforms including traditional outlets such as newspapers and television, as well as digital platforms like social media, serve as conduits for disseminating information about mental health. Even though the role of media in the public attitudes, beliefs and behaviors intended is acknowledged, it is still a concern that representations in the press about mental health problems are known to be disproportionately negative [10]. This concern extends across a global basis [11], some examples including the US [12], Canada [13], Japan [14] and Türkiye [15]. For the UK, the picture demonstrated by research shows a slightly more positive trend between 2008 and 2016 when the number of articles coded with danger to other people reduced by 4%, from 21 to 17 [16]. This change, interpreted to be modest [11] toward a positive trend is attributed to the increases in accounts to support readers in having a better understanding of mental health [17].

Mental health issues within the press are reported to be of a negative nature with stereotypes being reinforced. Dangerousness, violence and criminality [18, 19] are among the elements of such negativity, while some other common ones are unpredictability [20], bizarreness, vulnerability and dependency [21]. One of the key problems arising from negative coverage in the news is the impact on people who live with and experience mental health problems. A report by Mind surveying 515 individuals with mental health issues in England showed that negative depictions of media made those people's mental health problems worse. One third reported that they felt more depressed and anxious due to bad press, while one twelfth stated they felt suicidal as a result [22]. The primary messages the report revealed emphasized the poor balance of press coverage, reinforcing stigmatizing portrayals and perpetuating social exclusion as consequences, which also point toward the fact that sensationalizing of news items lack responsibility or sensitivity. In addition to the prevailing negativity in the coverage of the news on mental illness, there are some variations among the types of disorders. The theory of cyclical relationship between the press and its readers [23] within a circle of press influencing its readers and the desire of the readers about consuming negative stories is used to explain the pressure on the newspapers to produce such negative accounts. On social media, in the case of the sphere of Twitter, this desire of the users is stated to be reflected by the retweeting process of the news items supported by the readers. Yet, in such support, different disorders are shown to be represented more or less sympathetically [11]. To illustrate, schizophrenia has a more negative representation, while depression is inclined to be represented in a more sympathetic way [17, 24]. A similar finding is shown in another study which aimed to examine schizophrenia-related stigma on social media (Chinese microblogging website) [25]. For this purpose, the authors conducted a human-based content analysis on collected posts to identify if the posts conveyed stigma or not. Another purpose was to find out if schizophrenia-related stigma could be distinguished from stigma regarding other mental illnesses, namely depression-related stigma, in terms of psycholinguistic style. Through the use of their linguistic inquiry and word count software, the extracted posts were analyzed with respect to their psycholinguistic features. The results of the analysis showed that the proportion of posts which indicated stigma related to depression was much lower than the proportion of posts suggesting stigma related to schizophrenia. The level of sympathy is also shown to vary depending on the type of the newspaper. This point is analyzed in the newspapers of the UK where broadsheets are inclined to

adopt a less stigmatizing attitude [17], while red-top tabloids are prone to presenting a stigmatizing outlook [26]. This clear contrast is conveyed as the sensational, dramatic and easily accessible tabloid style versus the less subjective and more contemplative broadsheet approach [27].

Communication's reliance on shared knowledge that comprises knowledge of language and of the world reveals context along with the intention of the language user. This is critical to grasping the meaning that lies behind the utterances. This framework by Searle [28] suggests that it is not possible to understand fully what the speaker intends to convey unless these elements are considered. Distinctive from the intended illocutionary force, what the speaker wants to accomplish with his / her words and an utterance in language could have a literal meaning. This example underlines the way communication is reliant on shared knowledge as well as situational factors to be able to derive deeper meanings. It is posited that language used for people with mental illness constitutes an important aspect of stigma. Use of stigmatizing labels or derogatory terms is one way of communicating stigma to the person who has various mental problems. Data from research suggest that stigmatizing labels bring about distress, a feeling of rejection and self-stigma in people with mental illness [29, 30]. Appropriate labels given to patients with mental problems, in contrast, have been shown to improve behaviors concerning seeking help [31]. One related study aimed to examine the extent of stigma concerning treatment avoidance among 14-year-old school students in England in relation to the way they refer to people having mental illness [30]. The data of the qualitative cross-sectional study consisted of the enumeration of the words and terms used to refer to mental illness based on the answers of the students to the question what kinds of words or phrases the student might use to describe someone that experiences mental health problems. The words and terms used were clustered in terms of their connotative and denotative meanings in line with the grounded theory approach, and labels were subsequently derived to capture the key themes attached by the students to the concepts of mental illness. Among the five themes identified from the data of the study, 'popular derogatory terms' (116 items) accounted for almost half of the words examined, while the use of psychiatric diagnoses (15 items) and terms related to violence (9 items) were unexpectedly infrequent. Another related study, motivated by the research gap concerning the commonly used derogatory adjectives for people with mental illness in India, found out that patients having psychotic disorders encountered more derogatory adjectives compared to ones having affective disorders [32]. The study further revealed that 60% of the patients and about 40% were teased by their family members and friends / colleagues, respectively by the use of various derogatory adjectives. Moreover, poor functioning was linked with the significantly higher number of derogatory labels.

The words and context which the words are attributed to are said to foster stigma and prejudice toward individuals with mental health conditions besides trivializing serious ones and experiences accompanying them. Accordingly, reporters have been advised that some words including 'crazy', 'nuts', 'lunatic', 'psycho', and so forth should never be used in reporting. This aspect was addressed in one study which analyzed 14 common terms in everyday language through Twitter data having the potential for stigmatizing mental illnesses in society. Drawing on annotation methods generally used in natural language processing (NLP), the authors focused on evaluating if awareness of mental

illnesses could help discourage impulsive uses of the pejorative senses of the words and identified the terms' uses, some of which were expressive, clinical and stigmatizing [33]. A subset of language features was investigated in another study to determine discriminatory characteristics for subreddits on online social media Reddit that became an important resource to share. The results suggested that there were discriminatory linguistic features among subreddits, including sentence complexity or vocabulary usage [34].

Health communication is an area represented by all journalistic genres, whether they be oral (i.e. television, Internet, and so forth) or written (i.e. reports, magazines, newspapers, and so on) [35]. As health communication is targeted towards general public with the source being represented by journalists or health communicators, the information conveyed in health communication is the output of a sort of intra-language translation, which enables the original medical language transformation into a common language [36]. Mental health and psychological issues are one of the most sensitive human conditions, and their handling in the news comes with certain challenges, some of which derive from the use of language. In this respect, attributive adjectives may be used to construe negative connotations and labelling that could lead to stigmatizing and otherizing perceptions for those with mental health problems. The use of adjectives and discrimination is a topic worthy of investigation to paid keen attention to, which was addressed by the World Psychiatric Association (WPA) in 2010 through a detailed document for the purpose of reducing stigma-discrimination towards people who meet the criteria of a mental disorder [37]. Accordingly, the Task Force established in 2009 would examine evidence regarding stigmatization of psychiatry and psychiatrists, providing recommendations about action that could be taken by national psychiatric societies and professionals in order to prevent or reduce their disciplines' stigmatization along with averting its despicable consequences. The World Psychiatric Association (WPA), as a result, recommended avoiding adjective diagnoses for mental disorders since that is the process which is marked as a first step in stigmatization. To put it differently, discrimination is told to start in the language, and thus, phrases like "people with …", "people who suffer from …", "people who have …", "people who meet the criteria for the diagnosis of …" or "people who live with …" were recommended to be used instead of the adjectives [37]. Pertaining to stigma-discrimination complex (SDC) which includes stigma, prejudice, stereotype and discrimination, authors and editors are recommended to use an inclusive language in all contexts so that the negative social impact of SDC in people that meet the criteria for a mental disorder could be reduced [38].

Regarding news media portrayal of people with mental disorders, the number of studies for Türkiye context is limited. One research focuses on journalism ethics in Türkiye concerning media portrayals of people with mental disorders [39]. Another one is a retrospective scanning study on schizophrenia in Turkish newspapers [40] and one work shows forensic elements, criminalization and victimization as the dominant themes in Turkish newspaper articles [41]. Grammatical analysis of language use concerning active - passive verb voice use and framing related to the representation of individuals that experience mental health problems as well as episodic and thematic framing approaches are analyzed in the other studies, respectively [42, 43]. Motivated against this background and to contribute to this area of research in the particular context, this study addresses

the use of language in the news as a unit of analysis based on the lexical analyses of the dataset that comprises a total of 725 newspaper articles on mental health and psychological problems published in six different Turkish newspapers over a six-year period (2014–2019). Based on the fact that mass media act as a significant contributor to the dissemination of information that might influence stigma related to mental disorders and illnesses, the present study analyzes newspaper stories and articles on mental health and people with mental issues. Particular emphasis is placed on the use of adjectives to describe people with mental problems along with the positive and negative connotations surrounding the particular problem. Thus, the study aims to contribute to the existing knowledge on the use of language and lexical aspects, addressing adjectives, attributions, nominalizations and connotations in print news media on the theme of mental disorders and people living with such health issues in the context of Türkiye which is a country with a rapidly changing political, economic and social agenda concerning the news and breaking out thereof. The developments in social context make up one of the significant causes of mental distress in a country, so Türkiye context in a constant state of flux is a good showcase of these themes and issues. This constitutes the other motivation and subordinate aim of the paper which also attempts to show the changes over the time period of analysis. A related further aim is to provide insights into journalistic practices in news media supportive of the correct use of language that is sensitive about avoiding phrases, collocations and / or adjectives provoking stigma and discrimination, which can help enhance perception and public knowledge regarding mental distress and people with mental disorder(s).

The rest of the paper is organized as follows: Sect. 2 presents the materials and methods, while Sect. 3 provides the experimental results. Section 4 addresses discussion, conclusion and future directions.

2 Materials and Methods

2.1 Mental Health Print News Dataset

Newspaper articles addressing mental health and mental illness-related themes selected from search with the key words of mental health, mental distress, mental disorder, mental illness, depression, depressive, bipolar disorder and affective disorder make up the dataset of this study. The newspaper articles were retrieved from the electronic sites of six daily national newspapers published in Türkiye between 2014–2019. The dataset used for the present study belongs to the dissertation thesis entitled *News Media Portrayal of Mental Health and Psychological Problems: An Analysis of Daily Newspapers in Türkiye* [44]. The total number of news articles in the dataset analyzed is 725 (*Hürriyet* ($n = 218$), Sabah ($n = 168$), *Milliyet* ($n = 158$), *Sözcü* ($n = 110$), *Cumhuriyet* ($n = 38$) and *Posta* ($n = 33$)). Table 1 provides the breakdown of the news articles by newspaper. The selected newspapers are popular and highly circulating ones in the country, with *Cumhuriyet* having a critical orientation. Thus, it can be noted that the dataset constitutes a representative sample in terms of the newspapers chosen.

Table 1. The corresponding number of newspaper articles by newspapers.

Newspaper	Total number of news articles
Hürriyet	218
Sabah	168
Milliyet	158
Sözcü	110
Cumhuriyet	38
Posta	33

2.2 Methods

Qualitative and quantitative content analysis was conducted to analyze the linguistic features used in the texts of the newspaper articles whose main themes were mental health, mental problems and people with mental health conditions. The newspaper articles were analyzed with respect to the use of language, particularly of attributive adjectives. Statistical Package for the Social Sciences (SPSS) software program (IBM SPSS Version 26.0) was used for the descriptive, frequency and statistical analyses of this study [45].

The aim was to identify connotations (positive, negative) revealed through the adjectives used to describe people with mental health problems and whether the use of reporting language on mental health conditions was in line with what had been suggested by APA [46]. The evaluation to achieve the stated aims of this study was made in two dimensions based on theoretical and quantitative elements including content analysis regarding linguistic features and time-frequency statistical analysis, respectively.

2.2.1 Theory of Computational Linguistics: Lexical Analysis

Computational linguistics, as a scientific and engineering discipline, is oriented toward understanding written and / or spoken language in view of a computational perspective. This sort of computational understanding of language provides vision into thinking and intelligence [47]. Formulating grammatical and semantic frameworks to characterize languages for enabling computationally manageable implementations regarding syntactic and semantic analysis, discovering processing techniques and learning principles that make use of structural and distributional, or statistical, features of language are among the theoretical goals of computational linguistics [48]. This study addressed the lexical aspects (including the use of adjectives, nominalizations and connotations) in national print news media in Türkiye. The themes of the news articles of the dataset are mental disorders and individuals with such health issues. Regarding lexical aspects, denotation refers to the straightforward and literal definition of a word with no additional emotional or cultural associations. Thus, denotation of a word or expression with its direct meaning represents the objective meaning that remains consistent regardless of the context. Connotation, on the other hand, consists of the ideas or meanings associated with it or suggested by it [49]. A positive connotation refers to a non-literal framing of an object or

term that intends to add a "good" association [50]. Positive connotations are used in writing to add levity to situations, communicate courtesy and express optimism. In contrast, a negative connotation refers to a word, sign or object regarded with a "bad" association. As a result, negative connotations have the function of evoking "bad" feelings [51, 52].

To help reduce stigma, the American Psychiatric Association (APA) suggests that the words be carefully chosen while writing about mental health. These suggestions are to focus on the person rather than on the condition as the mental health condition is only one aspect of an individual's life. Thus, it should not be reflected as a defining characteristic. For this reason, instead of using a statement like "He is schizophrenic.", "He is a person with schizophrenia." is preferred. Another point to pay attention to is to be specific, so specific disorders should be used whenever possible: "She was diagnosed with bipolar disorder." is to be preferred over "She was mentally ill." Finally, derogatory language needs to be avoided. To illustrate, "He has a mental health illness. He has a substance use disorder." is a statement to be preferred over this one which is suggested to be refrained from: "He suffers from mental illness. He is a drug abuser." [46].

2.2.2 Computational Linguistics: Lexical Analysis and Time-Frequency Statistical Analysis

Time-frequency is employed for understanding the distribution of data in the time-frequency domain to detect and separate the components of signals with non-overlapping, compact components, as well as to observe the prevalence of certain categories and identify possible imbalances in the dataset. A new time-frequency analysis technique applicable to the nature of the dataset has been developed in this study.

The most accurate way of classification is the frequency table where the observed data are clustered into classes. The table obtained gives the observation number in each class. When an experiment is done n times and event A happens f times, the f/n ratio is named relative frequency of event A. Let n increase and f/n relative frequency approaches a limit, this limit is named as the probability of A. For n with big numbers the probability of A is calculated through f/n. For known causes, it is known as the frequency definition of probability [53].

$$RelativeFrequency = Frequencyofaparticularevent/Samplesize$$

The following steps are followed to prepare the frequency table:

1st step: The number of observations is identified. n denotes the number of observation ($50 \leq n$ is preferred).

2nd step: Maximum and minimum values are found. Range is obtained when the difference between them is calculated.

$$range = max - min$$

3rd step: The number of classes is found.

$$\sqrt{n} \leq k, \ (k = integer)$$

$classnumber = k$ [53].

3 Experimental Results

This study has addressed the lexical aspects (including the use of adjectives, nominalizations and connotations) on the scale of time-frequency of different years in national print news media in Türkiye. The themes of the news articles of the dataset are mental disorders and individuals with such health issues. The results of the content and lexical analyses reveal that 35 items (4.8%) in 725 of the dataset contain positive descriptions, attributions and connotations regarding people with mental health disorders mentioned in the news articles analyzed. The number of negative descriptions, attributions and connotations is 134 (18.48%), and a higher number amounting to 353 (48.68%) is observed for neutral descriptions. In line with the number of news articles in each newspaper, *Hürriyet* was the newspaper with the highest number of positive ($n = 10$) and negative ($n = 43$) descriptions as well as neutral expressions ($n = 118$). These findings based on computational linguistic analyses by the newspapers are depicted in Figs. 1, 2 and 3.

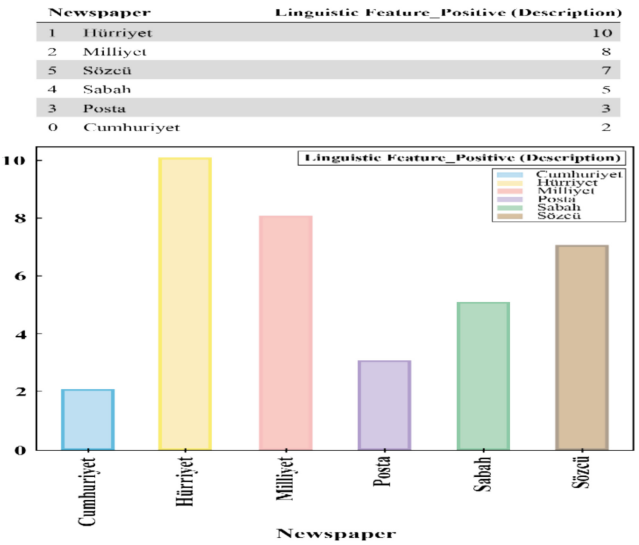

Fig. 1. Positive descriptions by the newspapers

When the analysis over the years is in question, the year 2015 included the highest number of positive descriptions ($n = 11$) followed by 2018 ($n = 8$). The year with the least positive descriptions observed in the news items is 2019 ($n = 2$). The results concerning negative descriptions peaked in 2019 ($n = 39$) followed by 2015 ($n = 27$) and saw the lowest rate in 2014 ($n = 15$) and 2018 ($n = 15$). Neutral descriptions were encountered at their highest rate in 2019 ($n = 89$), with 2018 ($n = 65$) and 2017 ($n = 64$) following at similar frequencies. The lowest number of neutral descriptions was observed in 2016 ($n = 36$) which was also the year when negative descriptions were seen the most. Computational linguistic-based analyses by the years are presented in Figs. 4, 5 and 6.

	Newspaper	Linguistic Feature_Negative (Description)
1	Hürriyet	43
4	Sabah	33
2	Milliyet	28
5	Sözcü	20
3	Posta	6
0	Cumhuriyet	4

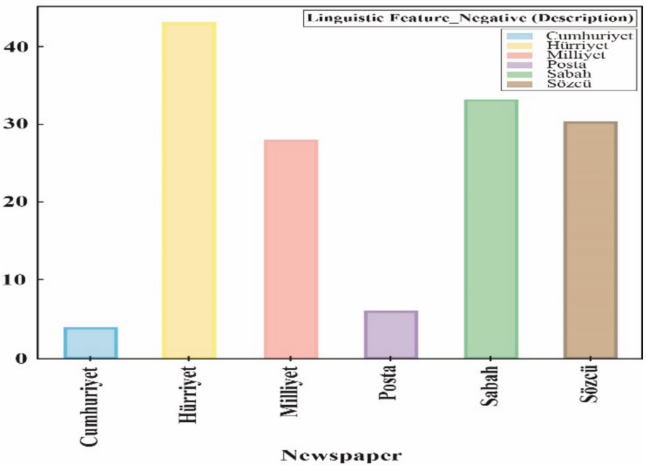

Fig. 2. Negative descriptions by the newspapers

	Newspaper	Linguistic Feature_Neutral
1	Hürriyet	118
4	Sabah	88
2	Milliyet	76
5	Sözcü	41
0	Cumhuriyet	18
3	Posta	12

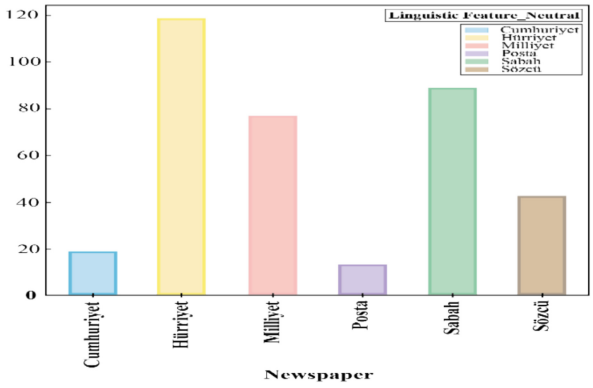

Fig. 3. Neutral descriptions by the newspapers

As for changes over the years, no stable increase or decrease is observed in terms of the use of positive-negative connotations, neutral expressions and linguistic elements.

The use of positive language has been found in 35 (4.8%) of the news items within the dataset, which represents a significantly low number given the total number of the

	Year	Linguistic Feature_Positive (Description)
0	2014	7
1	2015	11
2	2016	3
3	2017	4
4	2018	8
5	2019	2

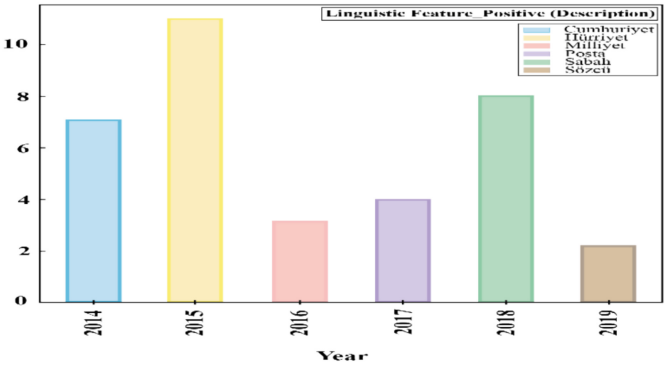

Fig. 4. Positive descriptions by the years

	Year	Linguistic Feature_Negative (Description)
0	2014	15
1	2015	27
2	2016	39
3	2017	20
4	2018	15
5	2019	18

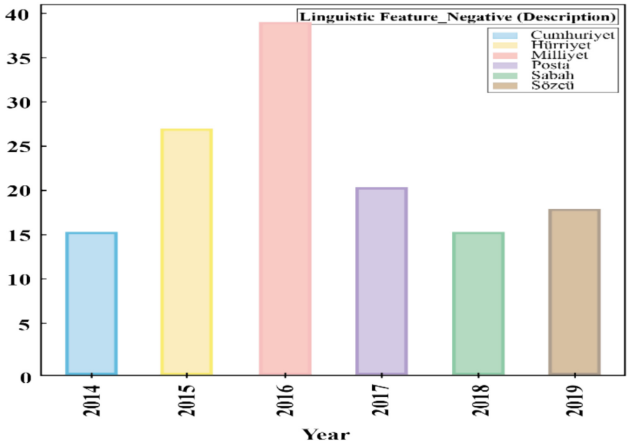

Fig. 5. Negative descriptions by the years

news articles analyzed ($N = 725$). Some selected examples of salient positive language use to describe people with mental conditions can be provided as follows: connection between creativity and having a psychotic disorder or mental distress, individual depicted as doing his/her job successfully and being proficient at work, able to recover, being smart, having superior qualities, celebrities not concealing their mental condition,

	Year	Linguistic Feature_Neutral
0	2014	42
1	2015	57
2	2016	36
3	2017	64
4	2018	65
5	2019	89

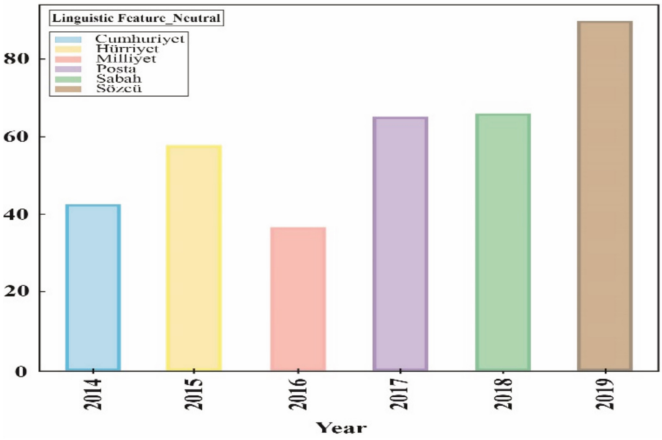

Fig. 6. Neutral descriptions by the years

being a legendary actor, being a role-model for the society, being snip-snap, a valuable name in Turkish literature, pioneer of feminism, engaging in successful artwork and achieving (re)integration with one's society. These positive descriptions supported by language and choice of lexical items underline success, recovery, creativity and favorable personality traits. When compared to the positive use of language and adjectives with positive connotations, the use of negative lexical features is much higher, with 134 of the news articles containing elements of negative attributions. Some selected examples from salient negative language use for the description of mental problems and people with mental conditions are as follows: drug addict, falling into the grip of alcoholism, being worse than before, not what he/she used to be, murdering his wife, an individual who intends to end his/her life, killer mother, talentless, spoilt, suffering from psychological problems, psychopath, patients with severe chronic mental illness, patricide actor, rapist woman, bizarre disorders, a group difficult to deal with, the woman who killed her mother, the defendant who killed her mother, the assailant who kicked the nurse wearing shorts, the kicking assailant, the suspect who killed his neighbor, the one (citing the name and surname) who killed her mother by strangling her, the defendant who killed his wife with an adze, yokel (citing the name and surname) who kicked a young woman on the bus, G. who is a bipolar patient (citing the name), stark mad (for severe schizophrenia), manic depressive juvenile, the psychopath who killed his neighbor, the footballer who committed suicide, the woman with axe who attacked the statue, the assailant on the minibus, mad person, the actress coming to the fore due to alcohol problem (citing the name and surname), the defendant who killed the famous writer, a patient group not normal psychologically, racist man, the one (citing the name and surname) who murdered

his girlfriend with 11 bullets, the woman who tried to strangle her baby, imprinted on the memories with her constant alcoholic, messy and miserable appearance, the bipolar woman who attacked the girl wearing a headscarf, schizophrenic kamikaze judge, not having good mental health, that mother, Kung fu fighter killer, the man (citing the name and surname) detained and hospitalized at psychiatric service due to having stabbed his mother 40 times, murder suspect who killed two people five years apart, serial killer, airport agitator, killing 18-year-old pregnant woman and dreadful illness (referring to Virginia Woolf's health problem).

As the negative depictions supported by negative language use and connotations show, unusual behaviors, violent acts, aggression, vulnerability, dependency, bizarreness and lack of self-care are the most prominent images portrayed by the descriptions of mental health challenges and people with mental health disorders.

4 Discussion, Conclusion and Future Directions

Positive connotations in health news particularly in the reporting of mental health are important as has been explained previously. Positive language can help reduce stigma about mental health issues, so if mental health problems are framed in a constructive way with hope elements, individuals with those conditions can seek help without the overwhelm of judgment [54, 55]. Closely related to this point, positive connotations are important for promoting wellbeing and recovery while encouraging behaviors oriented toward help-seeking [54]. Lastly, the use of positive language can result in a more informed public having empathy, which could show its repercussions in social support and policy implementations considering media's role in shaping societal attitudes and sharing public perception [55]. For the present paper, the results of the analyses show that about 5% of the newspaper articles carried positive descriptions, expressions, adjectives and connotations. In contrast, negative descriptions, derogatory language, stigmatizing phrases and attributions are found in about 19% of the newspaper articles, as exemplified in the experimental results. Contrary to the positive effects that could be benefited by the use of positive language, the use of negative language could cause the reinforcement of stigma, resulting in discrimination and social exclusion [56, 57]. Self-stigma is another potential negative impact concerning self-perception [56]. Furthermore, help-seeking behaviors may be hampered, public misunderstanding could arise, and negative consequences may emerge against the promotion of mental health awareness.

Being careful in word choice while writing about mental health can help reduce stigma in line with the suggestions posited by APA [46], which include focusing on the person instead of on the condition as the mental health condition is only one aspect of an individual's life. The results obtained from this study's analyses show that the negative descriptions reinforced by nominalized phrases and attributive adjectives along with the derogatory labels (exemplified in experimental results) used for people with mental conditions may reflect the problem as a defining characteristic of the person. While it is recommended that "He is a person with schizophrenia." could be preferred to "He is schizophrenic.", some phrases used in some newspaper articles like 'stark mad', 'psychopath', 'schizophrenic kamikaze', 'manic depressive juvenile' have been found not to adhere to these suggestions. Related to this point, some adjectives to describe

mental problems have been found to convey a tone of fear and uncertainty. For example, the use of following adjectives 'dreadful illness' and 'bizarre condition' may evoke unrealistic interpretations for ones who are not familiar with the conditions or cannot make sense out of such descriptions. Another point recommended by APA is to be specific, so specific disorders should be used whenever possible: "She was diagnosed with bipolar disorder." can be preferred to "She was mentally ill." This recommendation seems to be applicable in neutral descriptions (in the newspaper articles mentioning the specific diagnosis of the mental disorder) demonstrated by this study's findings. However, the use of expressions with negative implications and connotations such 'a group difficult to deal with' is broad and generalizing. The last recommendation of APA is related to avoiding the use of derogatory language. For instance, it is suggested that "He has a substance use disorder." can be a preferred mode of statement. Yet, the results of the current research have revealed that the use of labeling and descriptions like 'drug addict', 'rapist woman', 'yokel' and adjectives such as 'constant alcoholic, messy and miserable appearance', 'talentless' and 'spoilt' can be deemed derogatory and inappropriate based on APA's suggestions on mental health reporting.

On the whole, language used in media is influential, particularly in health communication that is targeted toward general public with the source being represented by health communicators and journalists. Among a myriad of health conditions, mental health distress is one of the most sensitive human conditions. The handling of news on these themes in the media, therefore, comes with its intrinsic challenges, some of which are due to the use of language. One problematic in this regard is the use of attributive adjectives, stigmatizing words or derogatory language which may result in the construing of negative connotations and labelling. This could further lead to stigmatizing and otherizing perceptions for those with mental health problems among other potential outcomes of hindering help-seeking behaviors, policy changes, reinforcing stigma, shaping public perception in a wrong direction, and so forth. Even though there has been a growing body of research in the news media portrayal of people having mental disorders, the number of studies concerning Türkiye is relatively limited. Hence, to contribute to this particular area of research, this study has examined the use of language in the news based on lexical analyses (including the use of adjectives, nominalizations and connotations) of the dataset comprising a total of 725 newspaper articles on mental health and psychological problems published in six different Turkish national newspapers on the scale of time-frequency of different years (2014–2019). Emphasis has been placed on the use of adjectives to describe people with mental problems along with the positive, negative and neutral use of language surrounding the problem. The results of the content analysis have shown that 35 of the newspaper articles (4.8%) out of 725 ones within the dataset include positive descriptions, attributions and connotations regarding people with mental health disorders. While positive descriptions are low in number, the number of negative descriptions, attributions and connotations is much higher, which is 134 (18.48%). 353 (48.68%) newspaper articles have been observed to include neutral descriptions. Another point of analysis concerns whether the reporting language on mental health conditions is consistent with what has been suggested by APA [46]. Literature review reveals that APA's changes in recommendations are an appropriate response to appeals by concerned bodies, and yet there is relatively little scientific research on the

topic [59]. Based on this gap, it has been found that some lexical choices, especially some adjectives and nominalized phrases used in the reporting language are not in line with the recommendations of APA since some derogatory labels, generalized conditions and misleading adjectives are observed in the texts of the news articles analyzed.

These observations could point to further future work which may carry out in-depth analyses through larger datasets over more extended periods of time by relating the findings to social contexts and significant developments (i.e. political, economic and cultural) encountered during the period of analysis. This direction can further be oriented towards other media in which various genres and styles of language are used across different disciplines. Furthermore, some principles concerning non-stigmatizing language may not be consistent between groups and communities, which need to be directly engaged with due to shifting language norms so that it can be understood what the particular communities prefer [60]. Taken together, the ultimate aim is to generate and implement journalistic practices with the use of accurate, responsible sensitive and inclusive language in mental health reporting in view of the changing norms in language and sensitivities of different communities.

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