Studies in Logic, Vol. 16, No. 6 (2023): 102–120
PII: 1674-3202(2023)-06-0102-19

The Interaction of Everyday Discourse and Professional Discourse —A Study of Generalized Argumentation in the Medicalization of Sleep*

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Abstract. Sleep has become a prime example of medicalization discussed by sociologists. Previous research has revealed that mass media plays a significant role in the process of sleep medicalization by translating professional medical knowledge into more accessible, popular knowledge, which involves a conversation between daily discourse and medical discourse. In order to further explore how specifically the two kinds of discourse interact with each other within a medicalization text, this paper adopts the method of Generalized Argumentation Theory to analyze a promotional text for Huawei's sleep-monitoring smartwatches. Based on the argumentation rules extracted from the "sleep medicalization" text of Huawei, the study finds that the trajectory of alternation between everyday and medical discourse unfolds around the change of the audience's cognitive state, and is meticulously designed to serve the divided function, which starts from daily discourse to attract the audience, then gradually increases the use of medical discourse to monger the disease, finally switches back to everyday discourse to provide solutions in daily life. This study contributes to advancing the micro research of medicalization in media discourse, and suggests more applications of Generalized Argumentation Theory in conjunction with the related disciplines to work on uncovering more nuanced rules as well as practically benefiting the public.

1 Introduction

Medicalization is a global trend in the development of 21st-century society, and its typical characteristic is that the everyday problems related to social structure and lifestyle are gradually evolved into "diseases". Supported by the prevailing concept of "positive health" in contemporary society, these problems are popularized and disseminated as concerned health problems of the general public by the health industry's

Received 2022-11-11

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*The research in this paper is supported by the Key Project of the Major Research Base of Humanities and Social Sciences of the Ministry of Education (22JJD720022), the Social Science Foundation Project of Fujian Province (FJ2023C072), and the College Students' Innovation and Entrepreneurship Training Program Project of Guangdong Province (S202111078016).

stakeholders. As an indispensable and routine part of daily life, sleep has become a prime example of medicalization discussed by sociologists. Research of British and American sociologists in this field has found that mass media, commercial companies, and professional knowledge groups have collaboratively pushed forward the "diseasification" of sleep. ([16], p. 41) This process involves the conversation between the "voice of medicine" and the "voice of the life-world"([8]). However, there is a lack of micro-level research on the interactive characteristics or rules.

Recently, the intervention of mobile data technology has promoted the medicalization of sleep into a new stage of development. In our country, this trend is particularly prominent: marked by digital wearable devices with the sleep-monitoring function, the sleep health industry has rapidly developed in the large consumer market of our country. As one of the leading tech giants, Huawei continuously refines the sleep monitoring functions of its smartwatches and enhances the professionalism of related data services. At the same time, with the help of we-media platforms like official accounts on WeChat, tech companies can carry out medicalization communication to promote sleep health devices. How is the construction of disease realized in such close conversations with the audience? Research is still lacking in the analysis of this construction process.

This paper adopts a functional analysis method of Generalized Argumentation Theory to move forward the research of sleep medicalization. Based on a case study focusing on argumentative analysis of the medicalization text in media discourse, the interaction rules between the aforementioned different discourse systems are revealed. The second part of this paper reviews theories of sleep medicalization. The third part introduces the background of the research question and the case study which is Huawei's promotion of its smartwatch emphasizing the function of screening Obstructive Sleep Apnea Syndrome. The fourth part presents a detailed micro-textual analysis of the case and extracts the rules of function, division, and expression, indicating how everyday experiential discourse and professional medical discourse interact with each other. The final part discusses the theoretical and practical significance of this study and looks forward to further research.

2 Theoretical Review and Reflection on the Medicalization of Sleep

Medicalization refers to the process by which nonmedical problems become defined and treated as medical problems, usually in terms of illnesses or disorders. ([2], p. 209) It consists of defining a problem in medical terms, using medical language to describe a problem, adopting a medical framework to understand a problem, or using a medical intervention to "treat" it. ([2], p. 211) The concept of medicalization was first introduced by the American sociologist Zola in 1972, with Conrad being its most representative contributor. He noted that a primary characteristic of American society in the 21st century is its comprehensive shift towards a medicalized society, and that

medicalization is a global process. Key features of this process include the diminishing of leading role of doctors ([3]) and pharmaceutical companies' aggressively driving medicalization for profit motives ([11], p. 315).

Sleep is an increasingly prominent example of the medicalization of everyday life. Since the beginning of this century, discourses and debates concerning health-related aspects and consequences of sleep (or lack of it) have prevailed in both professional culture and popular culture. Fittingly, sociological research has started to critically explore these discourses and debates, including work on the healthicization and medicalization of sleep and sleepiness in contemporary society. ([14], p. 647) Williams conducted a systematic study on the medicalization of sleep, suggesting that in our current society, sleep is being medicalized through the language of disease and disorder, and associated treatment regimens and clinical interventions, which includes both long recognized sleep disorders such as narcolepsy and other more recently constructed disorders such as obstructive sleep apnea ([14], p. 647). The profit-driven pharmaceutical industry and media have played a significant role in driving the medicalization of sleep ([16]). Pharmaceutical corporations, along with companies harboring analogous economic interests, engage in "Disease Mongering"[1] by expanding the boundaries of what is deemed treatable.

Functioning as a "rhetorical authority" ([8]), mass media constructs problems such as sleep disorders, sleep deprivation, and sleepiness —previously not categorized as diseases in conventional life experiences —into salient health problems in current society. The transformation of daily sleep matter into a "medical" problem inevitably leads to the pursuit of sleep health. The healthicization of sleep emphasizes the importance of sleep for health, well-being, and public safety, making it the duty of every responsible citizen to choose appropriate lifestyles and adhere to "good" sleep hygiene principles ([13], p. 266). Seale and Williams et al ([12]) equate it with "surveillance medicine" used by Armstrong ([1]) to indicate the important impetus of healthicization –the use of surveillance technologies and techniques in helping the creation of new categories of risk and disease that may not existed before. Armstrong ([1]) points out that the problematization of the normal is both an important expression of surveillance medicine and a vital precondition for its continuing proliferation by the end of the last century. In this era, the intervention of mobile information and communication technology in the monitoring and management of everyday sleep represents a new trend in the medicalization and healthicization of sleep ([15]). The integration of data sensing and monitoring technology to some extent drives individuals to actively pursue sleep health ([4]). "Digital proactive health"[2] has become the latest and most potent method to push the medicalization of sleep deeper into every-

[1] Disease Mongering refers to the selling of sickness that widens the boundaries of illness in order to grow markets for those who sell and deliver treatments. It is the contemporary form of "medicalization" ([10], p. 0684).

[2] *https://developer.huawei.com/consumer/cn/forum/topic/0202360639184160940*.

day life.

Medicalization and healthicization are widely promoted through mass media as well as through encounters in institutional and commercial settings. ([12], p. 419) Notably, with the rapid development of communication media, mass media is playing an increasingly significant role in the interaction between medicalization and commercialization. Medical sociologists have long been aware of this crucial trend: Williams ([13]) analyzed the "medicalization" of snoring in British newspapers, illustrating how print media, blending medical information with personal experiences of sleep disorders, frames snoring as a potentially fatal problem, notably linking it to obstructive sleep apnea syndrome, thereby easily constructing it as a medical problem. Similarly, Seale ([12]) investigated class disparities in the portrayal of sleep disorders. He found that higher-tier newspapers, tended to disseminate expert sleep medicine knowledge in order to cater to more affluent readers. In contrast, tabloids frequently featured personal narratives about sleep-related ailments, and provided self-diagnosis tips and informal treatment suggestions to their audience. Drawing upon Foucault's theory of knowledge and discourse, Kroll-Smith and Gunter ([9]) revealed how daytime excessive sleepiness or drowsiness is constructed as a "new truth" or "new knowledge". They demonstrated that a combination of mass media, profit-driven groups, and non-profit sleep organizations play a pivotal role in translating complex medical journal insights into more accessible, popular knowledge within the realm of pop culture. This transformation is achieved by formulating problem descriptions that are more captivating and vivid compared to the typically more reserved expressions of expert knowledge. Particularly, Kroll-Smith ([8]), through a diachronic analysis of media text vocabulary, identified how mass media employs rhetorical authority to frame daytime sleepiness as a recognized sleep disorder, and he proposed that outside the realm of traditional institutional medicine, "the voice of medicine" and "the voice of the life-world" have begun to converse.

Specifically, how do "the voice of medicine" and "the voice of the life-world" converse with each other within media discourse to persuade the public to accept a "new disease"? This issue will be further explored in this paper from the micro level of discourse. Generalized Argumentation Theory treats argumentation as a sequence of discourse actions with the goal of persuading. ([7], pp. 1–2) Similarly, the media discourse of sleep medicalization has the purpose of persuasion, aiming at convincing the public to purchase sleep health products. Therefore, the method of Generalized Argumentation can be used for a microanalysis of this discourse type. This involves examining the discourse function implemented and the expression means used in each step, and its role in the overall goal ([6], p. 12), so as to give a detailed presentation of how the discourse of sleep medicalization is generated step by step in a changing context. The analysis process will elucidate the interaction between everyday discourse and medical discourse, focusing on their respective appearances and the related roles played within the medicalization text.

3 Huawei Sleep Monitoring Smartwatch and Its Social Background

3.1 The current situation of sleep problems

With the development of modern society, sleep as a vital aspect of daily life is increasingly becoming a widespread problem affecting the majority of the population. According to the "2022 China National Health Sleep White Paper"[3], nearly three-quarters of the respondents had experienced sleep disturbances; and the "2023 China Health Sleep White Paper"[4] reveals that 80.5% of people suffer from sleep-related disturbances. The public's sleep troubles mainly include difficulty in falling asleep, frequent waking, insomnia, snoring, drowsiness, and frequent dreaming. Different age groups are faced with distinct sleep challenges: adolescents typically lack adequate sleep, young adults tend to stay up late, middle-aged individuals grapple with poor sleep quality, and the elderly often struggle with falling asleep and prevalent insomnia. The survey shows that 44% of young adults aged 19–25 stay up past midnight. Young adults between 19–35 years old are the demographic most prone to sleep problems, with poor sleep quality as a common problem. In the elderly demographic, 42% spend more than half an hour to fall asleep and 21% have insomnia.

Among the many factors influencing sleep, work stress stands out as the primary factor. People of all ages generally sleep poorly due to high stress, especially those in the 26–45 age group. For every two young adults with poor sleep, one attributes to intense stress. Moreover, health conditions significantly impact the quality of sleep. The older the age, the more likely sleep is affected by health problems. The physical and mental health of the elderly is closely linked to their sleep conditions. 46% of people aged 61 and above experience poor sleep quality due to health problems, and 9.7% of them feel their sleep quality is very poor.[5]

3.2 Social awareness of sleep problems

As sleep problems become increasingly prevalent, there is a growing awareness and emphasis on sleep health among the public. The "2023 China Health Sleep White Paper" indicates that nearly 90% of people are more concerned about sleep health than before. According to the "2022 China National Health Sleep White Paper", 70.6% of the surveyed individuals believe that good sleep is beneficial to health, and the notion that poor sleep is detrimental to health is widely accepted. Popular search terms related to sleep, such as "hypnosis for deep sleep in 10 seconds" "voice-controlled sleep aid livestreams" "sleep as a harbinger of serious illness" "best sleep monitoring apps" "how to improve poor sleep" "pre-sleep yoga for better sleep" and "food for calming and sleep" reflect the public's active pursuit of good sleep quality. Under the

[3] 2022 China National Health Sleep White Paper: *www.derucci.com/webView/sleepPaper.jhtml*.

[4] 2023 China Health Sleep White Paper: *www.derucci.com/webView/sleepPaper.jhtml*.

[5] 2022 China National Health Sleep White Paper: *www.derucci.com/webView/sleepPaper.jhtml*.

influence of a proactive health mindset, people are taking measures to self-manage their sleep, such as listening to sleep aid music, exercising, and purchasing sleep aid products. The "2022 National Sleep Insight Report" shows that 85% of the population have made various efforts to improve sleep quality.[6]

Fueled by this increasing awareness, the burgeoning sleep economy has witnessed substantial growth and is further catalyzed by strategic online marketing. Data from the "2023–2024 China Sleep Economy Industry Development and Consumer Demand Research Report" reveals that 63.2% of Chinese consumers opt to purchase sleep aid products when facing sleep problems.[7] According to the "2023 China Women's Quality Sleep White Paper", 55% of those troubled by sleep disturbances choose to buy sleep aid products for sleep improvement, with 19% opting for smartwatches.[8] As mentioned in the "2021–2022 Online Sleep Consumption Report", the 26–35 age group predominantly comprises the target demographic for smart sleep aid products, among which smart bracelets, smart health devices, and smartwatches are their top choices.[9]

3.3 The advancement of digital sleep health and the Huawei case under study

In the context of rapid technological evolution and consumption upgrading, there is a discernible trend toward embracing smart sleep aid products with the support of technological and medical research. Huawei, a frontrunner in this arena, has been instrumental in pioneering the integration of digital proactive health management into the sleep health sector. Notably, Huawei stands out as the first in China to develop and commercialize smart wearable devices equipped with PPG heart rate sensors, specifically designed for sleep monitoring. This initiative, launched in 2014, was further enhanced in 2018 with the introduction of Huawei's "Proactive Health" concept.[10] It aims to seamlessly blend the advancements of the digital world with everyday health practices, drawing on Huawei's extensive expertise in smart wearables and sports health domains.[11] Huawei has also pioneered the integration of advanced sports health technology and smart wearables to enhance consumers' awareness of proactive health management. In 2019, Huawei collaborated closely with the prestigious 301 Hospital, developing the sleep apnea syndrome detection function for

[6] 2022 National Sleep Insight Report: *www.mob.com/mobdata/report/160*.

[7] 2023–2024 China Sleep Economy Industry Development and Consumer Demand Research Report: *www.iimedia.cn/c400/92947.html*.

[8] 2023 China Women's Quality Sleep White Paper: *www.cbndata.com/report/3128/detail*.

[9] 2021–2022 Online Sleep Consumption Report: *https://finance.sina.com.cn/tech/2022-03-24/doc-imcwipii0186815.shtml*.

[10] *https://developer.huawei.com/consumer/cn/forum/topic/0202360639184160940*.

[11] *www.thepaper.cn/newsDetail_forward_9196163*.

its smartwatches[12], based on data from 2.9 million research users.[13] This development led to the provision of convenient sleep health management services such as risk screening for sleep apnea, medical referrals, and customized intervention plans. Thus, Huawei's smart wearables serve as an interface between offline and online realms, bridging in-hospital experts with the general public and transforming complex professional medical equipment into "everyday proactive health management devices" for the masses. Furthermore, Huawei utilizes digital media for sleep health education so as to enhance public awareness about proactive health monitoring and to promote its smart wearables.

The case of this paper, originated from a post "The Three Signs Reveal Your Sleep Problems"[14], which was published on Huawei's Sports and Health official account on March 21, 2022, and attracted over 100,000 readers. The primary content of this post is the introduction of Obstructive Sleep Apnea (OSA), and the promotion of the capability to identify the OSA risk of Huawei's smart wearables. The feature of screening OSA sets Huawei apart in the competitive landscape of sleep monitoring watch manufacturers. Therefore, this particular case study is representative and can be a window to offer insights into the nuanced discourse mechanism employed by Huawei in marketing its sleep health products and the broader context of social medicalization trends.

4 Generalized Argumentation Approach to the Huawei Smartwatch Case

This section will adopt the method of Generalized Argumentation Theory to study the Huawei case, which is comprised of two parts: firstly, an argumentative discourse analysis of the media text of the Huawei case; and secondly, the identification and extraction of the argumentation rules utilized within the text.

4.1 Argumentative discourse analysis of the Huawei case

Owing to space constraints, this paper will not include the extensive original text of the Huawei case, but will instead describe its core content. The text is segmented into six parts, each distinguished by its specific function. In each part of this section, the function implemented of each segment will be summarized first, then the text content of each segment will be described, and last a discourse analysis of each segment based on Generalized Argumentation Theory will be given.

[12] *https://developer.huawei.com/consumer/cn/doc/ecosystem-Guides/07_04_cooperationcase-0000001077456792*.

[13] *www.bilibili.com/video/BV1Rv4y1D7fj*.

[14] *https://mp.weixin.qq.com/s/2qWmgkohWHdtIOu8KDdryg*.

4.1.1 Creating suspense: attracting audience's attention to sleep problems

Description: The first segment consists of the text's title, "The Three Signs Reveal Your Sleep Problems".

Analysis: Currently, sleep problems such as staying up late and insomnia, have become a common phenomenon that troubles many people and are increasingly gaining the public's attention and concern. Under this circumstance, the title uses a broad, everyday expression "Sleep Problems", instead of the more precise medical terminology "Obstructive Sleep Apnea Syndrome" used later in the text. This choice of words makes the topic more relevant to the general public, thereby attracting a wider potential audience. The intended audience primarily comprises people who are concerned about sleep, including those who already have sleep problems or disorders, those who suspect they have sleep problems, and those who pay attention to sleep health. Furthermore, the use of the second-person pronoun "you" in the title, "Your Sleep Problems", not only narrows the gap between the text and its audience but also encourages the audience to reflect on their personal sleep experiences and focus on their health, thereby fostering enhanced audience engagement. Overall, the title strategically creates a sense of suspense by alluding to three sleep-related phenomena without disclosing the specifics, which may arouse the readers' curiosity and prompt them to delve into the entire article, thus acquiring more knowledge about sleep problems and engaging in self-diagnosis.

4.1.2 Constructing scenarios: linking daily symptoms to new sleep disease

Description: The second segment enters into the body content, starting with a question to the audience: "I wonder if you experience any of the following conditions?" and listing several common symptoms of sleep, such as "feeling like having a 'fake sleep'", "waking up with headaches, dry mouth", "lack of spirits in working", and "showing anxiety, irritability, and other negative emotions". Furthermore, it points out that frequent occurrences of these symptoms might be caused by "Sleep Apnea".

Analysis: The majority of the audience likely have experienced some sleep disturbances but are unfamiliar with sleep disease. Therefore, they have an interest in the primary symptoms of sleep problems for self-diagnosis. In this context, this segment initially addresses the audience directly with the second person pronoun "you" and asks them a question, guiding them into a scenario of self-diagnosis. It then lists a few everyday sleep experiences that most people have encountered, easily immersing the audience in the scene of these specific feelings. The segment further draws the audience's attention in bold font and uses the medical term "sleep apnea", to link everyday symptoms to a new sleep disease which is unfamiliar to the audience, thus arousing the audience's attention to the daily sleep problems and desire to learn more about sleep apnea. This may even lead some readers to self-identify with sleep ap-

nea, that is, to suspect that they suffer from the disease, thereby potentially triggering anxiety about the disease.

4.1.3 Disguising science popularization: blurring the boundary between everyday symptoms and sleep disease

Description: The third segment of the text begins with a brief overview of OSA, introducing it as a respiratory sleep disorder, among which obstructive sleep apnea is most common, and citing literature to explain that the most common cause is upper airway obstruction. Subsequently, it lists common symptoms like difficulty falling asleep, waking up gasping (due to asphyxiation), morning headaches, sluggishness, daytime fatigue, and lack of energy and specifically highlights the three primary symptoms as "daytime sleepiness" "nocturnal snoring" and "emotional disturbances". Finally, it concludes with the intriguing inquiry, "What secrets exist between emotions and sleep apnea?"

Analysis: The audience's lack of sufficient awareness of OSA and its association with their daily symptoms leads them to want to learn more about OSA. In this case, this segment offers a superficial "scientific popularization" that combines a few professional medical terms with colloquial expressions to introduce OSA, making the audience feel it scientifically sound while easy to understand. Specifically, it first introduces the full term "Obstructive Sleep Apnea Syndrome" and its English abbreviation, OSA, and briefly explains upper airway obstruction as the reason for its occurrence by quoting the literature. Then, the transition from medical discourse to everyday discourse is made by listing common symptoms of the disease, such as "daytime fatigue and lack of energy" and providing symptoms of the situations of ordinary sleep symptoms and symptoms caused by the disease when elaborating the three typical symptoms of OSA in detail, so as to facilitate the audience to distinguish.

In fact, this segment undergoes some significant processing under the disguise of science popularization, thereby inducing the audience to blur the distinction between daily symptoms and OSA and even to equate the two. For instance, the emphasis on "Sleep Apnea Syndrome" and daily symptoms like "difficulty in falling asleep, morning headaches, and sluggishness" through bold fonts, guides the audience to enhance the psychological association between OSA and everyday sleep experiences and to dilute the distinction and boundary between them, which could even lead the audience to mistakenly equate having these symptoms with OSA. Furthermore, although the segment describes the different specific manifestations of ordinary sleep problems (like daytime sleepiness and nocturnal snoring) and OSA symptoms, its descriptions are vague, lacking the detailed diagnostic criteria (e.g., frequent occurrences of breathing cessation for over 10 seconds during sleep[15]) typically found in educational articles about OSA. It also omits specifics on key demographics affected (such as middle-

[15]崔小川"危险的睡眠呼吸暂停综合征": *www.haodf.com/neirong/wenzhang/61006.html*.

aged people, people with drinking or obesity[16]), thus making it difficult for readers with daily sleep disorders to self-diagnose and exclude. Consequently, they may incorrectly link their sleep disorders with OSA, leading to unnecessary health anxieties.

Additionally, this segment emphasizes "emotional" OSA in its title and uses a purple font to present "Emotional Disorders" as a subheading, regarding it as one of the three key symptoms of OSA as "Daytime Sleepiness" and "Nocturnal Snoring". Also, it uses the colored background boxes to highlight the specific manifestations of emotional disorders. These visual factors all work to induce the audience to closely associate emotional disorders with OSA, thereby overlooking the other two major symptoms of OSA. In fact, emotional disorders like depression and anxiety have become common phenomena among many people experiencing stress in current society. This segment highlights the connection between emotional disorders and OSA, making the boundaries between them fuzzy in the audience's perception. In particular, those who already have emotional problems are more likely to self-diagnose themselves with OSA based on the fragmented medical discourse, thus resulting in anxiety about the disease.

Lastly, the segment concludes by posing the question "What secrets exist between emotions and sleep apnea", not only reminding the audience of the connection between emotions and OSA but also leaving suspense to inspire the audience's curiosity about the intrinsic link between the two.

4.1.4 Appealing to authority: enhancing audience's awareness of new sleep disease

Description: The fourth segment begins by stating that "emotional disorders are one of the main symptoms of Sleep Apnea Syndrome", with a "32% depression occurrence rate among OSA patients." It then explains the most important reason OSA leads to emotional disorders: "nocturnal hypoxia and repeated micro-awakenings" disrupt "sleep structure", leading to "daytime sleepiness and fatigue", which over time "result in anxiety, depression, and other emotional disorders". Furthermore, it points out that OSA may cause "hypertension, diabetes, cardiovascular and cerebrovascular diseases", which are also "high-risk factors for depressive mood disorders"; and may cause "cognitive impairment", which could lead to "anxiety". Finally, the segment mentions that "with age (especially in the elderly)," OSA patients "exhibit more obvious anxiety, depression, and other psychological problems."

Analysis: Based on the question posed at the end of the previous segment and self-concern, the audience seeks to understand the relationship between emotion and OSA risk. In this context, the fourth segment answers the question by citing scientific literature. On one hand, this segment utilizes medical discourse by entirely referencing professional medical literature to substantiate the strong correlation between

[16] 人民网"睡眠杀手出没，最爱尾随青壮年"：*http://health.people.com.cn/n1/2022/0322/c14739-32380705.html*.

emotional disorders and OSA. This authoritative backing lends a sense of scientific credibility and trustworthiness, psychologically convincing the audience of the close link between everyday emotional experiences and OSA. The professionalism is evident through citing specific data, such as a "32% depression occurrence rate," and using medical terminology like "changes in sleep structure and intermittent nocturnal hypoxia" and "cognitive function impairment".

On the other hand, this segment also employs strategies like highlighting parts of the cited content to induce the audience to reinforce self-reasoning, thereby expanding the potential users of the product. For instance, it highlights the severe risks associated with OSA through bolded text - like the incidence of depression being "32%", "the risk factor for hypertension, diabetes, cardiovascular and cerebrovascular diseases," "causing various cognitive impairments"—to enhance the audience's attention to sleep problems. This also strengthens the audience's self-selection to equate these symptoms with OSA, especially those displaying such symptoms are more likely to produce anxiety and buy products. Also, the above symptoms of OSA in bold font, like "changes in sleep structure" "hypertension, diabetes, cardiovascular diseases" and "cognitive impairment", are commonly seen in the elderly and the end of this segment emphasizes the symptoms of the elderly, are more severe, which to a certain extent implies the audience to associate the elderly group with OSA, thus making the elderly become a potential target group of the product. Additionally, this segment uses "mainly depression and anxiety, affected by age" as the headline, which not only reinforces the audience's impression about the connection between emotions like depression and anxiety with OSA, making people with depression and anxiety become potential target customers; but also avoid being limited to the elderly by adopting the broader expression "affected by age", thereby maximizing the target users.

4.1.5 Shifting atmosphere: advocating daily self-diagnosis and intervention

Description: The fifth segment begins with the question "What is high-quality sleep?" and uses examples from daily life to distinguish high-quality, regular sleep from low-quality, irregular sleep. Then, it advises the audience should be screened and intervened in time if they have the OSA symptoms mentioned earlier. Lastly, it gives a series of specific psychological intervention methods for emotional disorders, encompassing "popular science knowledge, lifestyle, cognitive intervention, and family understanding." In terms of popular science knowledge, it advocates to know more medical knowledge about OSA. On lifestyle, it advises to avoid bad living habits and eating habits and exercise scientifically. Regarding cognitive intervention, it suggests "engaging in more positive activities" and "seizing every moment that can enhance happiness." For family understanding, it calls for more care and support for family members or friends who are at risk of OSA or have been diagnosed with OSA.

Analysis: Based on the medical argument above, the audience may strengthen the cognition that mood, age, and other symptoms are closely related to OSA, and increase their awareness of sleep risk, and those with symptoms may even feel anxious. In this case, this segment transits from medical discourse back to daily discourse. Firstly, it uses examples from daily life experiences instead of professional medical standards to help the audience tell high-quality, regular sleep from low-quality, irregular sleep. Specifically, it juxtaposes scenarios like a consistent high-quality sleep schedule (working night shifts but having regular high-quality deep sleep from 9:00 AM to 5:00 PM every day) with irregular and fragmented sleep habits (sleeping 6 hours during the day for half a month and then 6 hours at night for the other half month), guiding the audience to self-evaluate their own sleep quality. Secondly, it mentions the daily symptoms of OSA again and encourages the audience to self-diagnose whether they are at risk of OSA. Lastly, it advocates adopting psychological self-intervention methods, including knowing relevant medical knowledge, exercising scientifically, giving yourself positive encouragement and family care and support. From the audience's point of view, these methods are reasonable, but are general and lack operability and feasibility.

4.1.6 Presenting a contrast: recommending professional self-diagnosis and intervention devices

Description: The sixth segment first introduces a simple way to identify OSA, that is, to download the Cardiac Health Research APP and wear a Huawei smart wearable device to sleep, which makes it possible for users to view the previous night's data such as the number of sleep apnea occurrences in the APP, thus "enabling screening at home". It then explains the professionalism and accuracy of using Huawei smart wearables to screen OSA risk, such as "high-performance heart rate sensor" "multi-parameter fusion judgment", and with an accuracy rate of "85.9%". Lastly, it outlines simple steps to improve sleep quality through the Huawei Health & Fitness App, including using sleep aid music, setting up automatic reminders to fall asleep and wake up, recording sleep process, and generating personalized suggestions for sleep improvement.

Analysis: After establishing the need for self-diagnosis and intervention in the context of OSA, the audience is eager to self-diagnose and intervene. This segment thus offers a simpler professional method for diagnosis and intervention, that is, wearing Huawei smart wearables, which contrasts with the complex daily diagnosis and intervention methods mentioned above. The simplicity and professional efficacy of Huawei products appear more attractive to the audience for personal health management, thus they are inclined to buy Huawei products. Generally speaking, the segment is presented as a blend of professional discourse and everyday discourse, effectively illustrating Huawei smart wearables as a bridge that connects the realms of hospital-

based care and home environments.

The segment emphasizes the simplicity, feasibility, and accessibility of using Huawei smart wearables for monitoring and intervention through the title, bold font, colorful highlight, and image explanation, such as "A Simple Trick for Identifying OSA Risk" "Able to Screen at Home" "Unobtrusive Screening" and "Simple Steps for Better Sleep". Also, it elaborates on the professional and scientific nature of using Huawei devices for self-diagnosis, for instance, emphasizing the function of collecting professional data like "frequency of sleep apnea" with bold text; indicating the use of "professional algorithms" and the provision of "scientific suggestions" with the caption; explaining the collaboration with Hospital 301 for "sleep apnea research" with a colorful subheading. Consequently, this portrayal enables audiences to appreciate the practicality of Huawei smart wearables for home-based OSA risk assessment and personalized sleep management, thereby fostering a proactive inclination to purchase as a means to alleviate health-related anxieties.

4.2 Extraction of argumentation rules

Based on the above detailed analysis of the six segments of the text of Huawei case, the functional structure of the entire text can be summarized, which contains each segment's context, function, relationship with the overall goal, and expression, as presented in the Table 1. According to the table, we can extract the argumentation rules of the text as follows:

Function Rules:

1 Creating Suspense to Attract Audience's Attention to Sleep Problems

When the majority of people have sleep problems and are concerned about them, setting up suspense about sleep problems can attract the audience's attention, and motivate them to learn about symptoms related to sleep problems and conduct self-diagnosis.

2 Constructing Scenarios to Link Everyday Symptoms to New Sleep Disease

When a significant portion of the audience has experienced sleep disturbances and is eager to understand related symptoms, presenting scenarios depicting common sleep-related symptoms and associating them with less familiar sleep diseases can effectively capture the audience's attention and arouse their curiosity about these conditions.

3 Disguising Science Popularization to Blur the Boundary Between Everyday Symptoms and Sleep Disease

When the audience is unfamiliar with OSA and wants to learn more about it, presenting the disguised science popularization about the disease can induce them to confuse everyday symptoms with the disease, potentially causing anxiety.

4 Appealing to Authority to Enhance the Audience's Awareness of New Sleep Disease

Table 1: Functional Structure of the "Sleep Medicalization" Text in a Huawei Smartwatch Advertisement

Segment	1	2	3	4	5	6
Context	Sleep problems become a common phenomenon, increasingly arousing the public's concern.	Most audience have experienced sleep disturbances and want to know the symptoms of sleep problems.	The audience has limited knowledge of OSA and wants to learn more about it.	The audience is curious about the relationship between emotions and OSA.	The audience has enhanced their awareness and anxiety about the disease.	The audience wants to self-diagnose and intervene, but finds the methods previously given are complex and impractical.
Function	Creating suspense to attract audience attention to sleep problems	Constructing scenarios to link daily symptoms to new sleep disease	Disguising science popularization to blur the boundary between everyday symptoms and sleep disease	Appealing to authority to enhance audience's awareness of new sleep disease	Shifting atmosphere to advocate daily self-diagnosis and intervention	Presenting a contrast to recommend professional self-diagnosis and intervention devices
Role in the Overall Goal	Attracting the Widest Possbile Audience	Mongering the Anxiety of Disease (Progressive: Introducing the New Disease → Popularizing of the New Disease → Providing Evidence for the New Disease)			Providing Solutions (Contrast: General, Complex Methods vs. Professional, Simple, Devices)	
Expression	**Everyday Discourse** using the ordinary expression "sleep problems" and the second person pronoun "you"	**Everyday Discourse** → **Professional Discourse** **Everyday** listing daily sleep symptoms **Professional** using the medical term "sleep apnea"	**Professional Discourse** → **Everyday Discourse** **Professional** using the medical term "Obstructive Sleep Apnea Syndrome" and citing literature **Everyday** listing the common symptoms of OSA	**Professional Discourse** all citing professional medical literature; referencing data, e.g. "a 32% incidence of depression"; using medical terms e.g. "changes in sleep structure"	**Everyday Discourse** giving examples of high and low-quality sleep from daily life; providing daily psychological intervention methods, e.g. "popular science knowledge, lifestyle"	**Everyday Discourse** + **Professional Discourse** **Everyday** using colloquial expressions e.g. "a simple trick for identifying OSA Risk" **Professional** using data, "accuracy of 85.9%"

When the audience is curious about the connection between emotions and OSA, using authoritative sources to demonstrate a close relation between them can reinforce their understanding and anxiety about the new disease.

5 Shifting the Atmosphere to Advocate Daily Self-Diagnosis and Intervention

When the audience has enhanced their awareness and anxiety about the disease, shifting to a more everyday atmosphere to provide methods for psychological intervention can guide them to self-diagnose and intervene in their daily lives.

6 Presenting a Contrast to Recommend Professional Self-Diagnosis and Intervention Devices

When the audience seeks self-diagnosis and intervention but finds previously suggested methods complex and impractical, recommending professional devices which are simpler and more feasible in contrast can attract the audience to make a purchase.

Division Rules: The overall aim of this advertisement is to promote smart wearable products of Huawei. This is realized through three major functional blocks: **Attracting the Widest Possible Audience** (segment 1), **Mongering the Anxiety of Disease** (segment 2, 3 and 4), and **Providing Solutions** (segment 5 and 6).

Corresponding to the first segment of the advertisement, the first functional block begins by addressing prevalent sleep problems in daily life, which aims to attract as many potential audiences as possible. Consisting of the second, third, and fourth segments, the second functional block transits from the audience's daily experiences of sleep problems to more professional medical argument, which progressively realizes the medicalized construction of sleep problems (introducing OSA $\longrightarrow$ popularizing OSA $\longrightarrow$ providing evidence for OSA), and gradually intensifies the audience's disease anxiety. Composed of the fifth and sixth segments, the third functional block returns to the context of daily life and provides solutions for the disease anxiety developed in the second functional block. It initially presents general and impractical daily methods for diagnosis and intervention, and then shifts to provide more professional, easy-to-use diagnostic equipment, which strategically makes a contrast between difficult solutions and easy solutions so as to achieve the goal of promoting the product.

Expression Rules:

This text represents an interaction between everyday discourse and professional discourse, each serving distinct purposes. Here's a summary of the expression rules used for both: **Everyday Discourse**: it is presented through listing common sleep symptoms in daily life, giving examples of everyday sleep experiences relevant to the audience, engaging the audience in conversation by using the second personal pronoun "you", and adopting colloquial expressions that are accessible and easy to understand. **Professional Discourse**: it is realized by referencing medical literature,

adopting medical terminology, citing data and statistics.

Significantly, the expression rules of daily discourse and professional discourse in this text cooperate with the function rules and division rules above, thus following a regular pattern of switching as follows: initially, the text articulates the theme of sleep problems with everyday discourse to attract the audience. Then it describes common symptoms in everyday discourse and integrates it with medical terminology to establish a connection between daily life and the disease. Subsequently, the text gradually increases the use of medical discourse, escalating the practice of "disease mongering" to a climax. After that, it switches back to everyday discourse to provide general solutions for coping with the disease. Finally, it combines daily discourse with medical discourse to promote professional devices for daily sleep diagnosis.

5 Conclusion

Adopting the method of Generalized Argumentation, this study analyzes Huawei's promotional text for sleep-monitoring smartwatches, which notably feature screening for Obstructive Sleep Apnea Syndrome (OSA) as a key selling point. The analysis successfully extracts function, division, and expression rules within the discourse of 'sleep medicalization' embedded in the advertisement and finds that the trajectory of alternation between everyday discourse and medical discourse unfolds in accordance with the change of the audience's cognitive and psychological state. This alternation of discourse is not arbitrary; rather, it is meticulously designed to serve the function and the division, making each segment coherently contribute to the overall goal. These identified rules are consistent with common sense, that is, the audience's habits of understanding. It also illustrates that the deployment of the functions is grounded in a dynamic context including the social background and the audience's state of knowledge, thereby demonstrating the rationality inherent in the generation of the whole text.

This study not only reinforces the existing research findings of the medicalization of sleep theory, but also significantly advances the depth of research in this field. It demonstrates that the process of sleep medicalization in China's health communication reflects global trends: a coalition of mass media, commercial entities, and professional institutions collaboratively embed the medicalization of sleep into everyday life. Driven by profit motives, these commercial groups work in concert with professional bodies, blending the professional discourse of sleep research findings with everyday discourse through mass media, transforming it into simple, understandable knowledge for the public. Moreover, this study further elucidates the nuanced, micro-level characteristics inherent in the construction of sleep medicalization in media text. Earlier studies have indicated that mass media presents a dialogue between "the voice of medicine" and "the voice of the lifeworld" ([8]) during the process of medicalization of sleep. By adopting the methods of Generalized Argumentation Theory for

micro-level discourse analysis, this paper intricately dissects the interplay between medical discourse and everyday discourse in specific media communicative text. The case analysis reveals a distinct, strategically alternating pattern of such interaction, thereby enriching the analytical depth of sleep medicalization research and offering new insights into the interplay between professional and everyday discourses.

Additionally, this study demonstrates the potential of Generalized Argumentation Theory for practical application. The findings from the case study not only confirm the method's suitability for communicative discourse analysis but also underscore its effectiveness in unveiling the real-world implications of social issues through discourse analysis. Medical sociologists have noted that the use of surveillance medicine can result in the medicalization of everyday life and the expansion of medical authority into social and personal life. This trend continues to evolve today, fueled by the advancement of personal health technologies. Closely associated with this, the proliferation of health and disease information via internet media has led to a significant transformation in how this knowledge is presented and consumed. This transformation not only intensifies the negative effects of healthism, namely the pursuit of health leading to health anxiety, but also poses challenges to doctor-patient communication in professional contexts. Critical Discourse Studies seeks to reveal how the popularization of biomedical discourse often involves complex linguistic strategies ([5], p. 851). Utilizing the Generalized Argumentation approach to expose these complex linguistic strategies proves to be an effective method.

Finally, while this case study has revealed that within the 'popularization discourse' of mass media text, the interaction between medical and everyday discourse is strategically orchestrated by the functional goals of each block, a deeper investigation into the more nuanced rules of interaction requires further in-depth study. Besides, a more detailed examination is needed to differentiate between 'popular science discourse' and 'pseudo-scientific discourse' regarding the melding of everyday and medical discourse, and to explore how these distinctions can assist audiences in making informed discernments.

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日常话语与专业话语的交互
——睡眠“医学化”的广义论证研究

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摘　要

睡眠已成为社会学家讨论的医学化的一个典型例子。已有研究揭示，大众媒体在睡眠医学化过程中扮演了重要角色，通过将专业医学知识转化为更易接近、普及的知识，实现了日常话语和医学话语之间的对话。为了进一步探讨这两种话语在医学化文本中是如何具体互动的，本文采用广义论证理论方法分析了华为睡眠监测智能手表的宣传文本。基于从华为“睡眠医学化”文本中提取的论证规则，研究发现日常话语和医学话语的交替轨迹围绕着受众认知状态的变化而展开，被精心设计以服务于论证分块功能，即从日常话语开始吸引受众，然后逐渐增加医学话语的使用以贩卖疾病，最后转回日常话语以提供日常生活中的解决方案。本研究有助于推进媒体话语中医学化问题的微观研究；基于研究发现建议广义论证理论与相关学科进一步协作，以揭示更为细微的话语规则，并在实践中更多地服务公众。

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