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Health commodified, health communified:

navigating digital consumptionscapes of well-being

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Abstract

Purpose: Historically, research on perceptions of health either converged upon the meanings created and proposed by specialists in the healthcare industry or focused on people who have medical conditions. This approach has failed to capture how the meanings and notions of health have been evolving as medicine extends into non-medical spheres and has left gaps in the exploration of how the meanings surrounding health and well-being are constructed, negotiated, and reproduced in lay discourse. This paper aims to fill this gap in the understanding of the perceptions surrounding health by investigating consumers' digitized visual accounts on social media.

Design/methodology/approach: Textual network and visual content analyses of posts extracted from Instagram are used to derive conclusions on definitions of health and well-being as perceived by healthy lay individuals.

Findings: Research demonstrates that digital discourse of health is clustered around four F's; namely; food, fitness, fashion, and feelings, which can be categorized with respect to their degrees of representation on a commodification/communification versus bodily/spiritual well-being map.

Originality/value: Our knowledge about the meanings of health as constructed and reflected by healthy lay people is very limited and even more so about how these meaning-making processes is realized through digital media. This study contributes to theory by integrating consumers' meaning-making literature into health perceptions, as well as investigating the role of social

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networks in enabling a consumptionscape of well-being. Besides a methodological contribution of employing social network analysis on textual data, this article also provides valuable insights for policy makers, communicators, and professionals of health.

Keywords: Health, lay meanings of health, social media, visual content analysis, social network analysis

Article Classification: Research paper

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Introduction

It has been more than a century since sociology and medicine crossed paths, and today health constitutes a major target of research by social scientists. Scholarly interest in this domain has particularly escalated by the 1970s, as the expansion of medicine into domains of everyday existence became more and more significant. Since then, much of academic discussion developed around *medicalization*, a term coined to explain a particular form of social control in which medical authority expanded into a wide range of personal and societal spheres (e.g., Zola, 1972; Illich, 1975). Medicalization, in its broad sense, referred to ultimate dominance and authority of the physicians (or healthcare providers in general) over patients' capacity to make their own health-related decisions (Lupton, 1995), hence, was considered a phenomenon that should be rejected in the name of liberation (Conrad, 1975).

The dynamics embedded in medicalization were dramatically reshaped in recent decades, as the public medical systems become more intertwined with neoliberal market-based mechanisms (World Health Organization, 2010). The withdrawal of the state from providing healthcare services paved the road for patients to transform into consumers, furnishing them with the

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capacity and responsibility to act as independent agents to control and regulate their own health (Kristensen *et al.*, 2016). Moreover, the advent of information technologies, particularly the Internet, altered the scene further in developing new understandings of the roles of and relationships between the patients and physicians (Weiner and Biondich, 2006). Not surprisingly, these parties engage in generating new meanings of health, illness, and body every single day, conjointly with other actors in this complex consumptionscape of medicine. In this context, media plays a significant role in defining what is desirable and acceptable with regard to body and health as a primary agent of the consumer culture.

While much has been discussed about mediatization of health through conventional means (e.g., traditional mass media), research on novel meanings of health created through digital media is relatively new, with a large number of underexplored topics and lacking significant insights. In this context, digital health studies in recent years have been heavily focusing on subjects such as medical information seeking behavior, online support groups, digital apps to monitor and regulate health, and virtual medical construction of the healthy body by various health promoters (Miah and Rich, 2008; Lupton, 2016). However, little is known about digitized meanings of health, as constructed and reflected by the healthy lay individuals *themselves.* This paper aims to take a step in the direction of exploring meanings and understandings surrounding health, as we investigate digitized visual accounts generated by healthy lay individuals using a particular social media platform, Instagram.

The organization of this paper is as follows: first, we trace the stance of the consumer-patient relationship in the medical consumptionscape, and delve into medicalization of life and its relevant aspects from a historical framework. Then, we focus on the lay perceptions of health, personal and social construction of meanings, the pivotal role of media in this process,

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particularly during the last decade, and how digital medicine enhances this trend. Following the identification of gaps in the literature, subsequent sections present the methodology and findings of the paper. To conceptualize lay meanings of health that were developed on the discourses of healthy lay individuals through social media, which contributes to a recently emerging area in consumption research, we offer a new model. The four-quadrant model maps the digital consumptionscapes of health with respect to their degrees of commodification/communification and bodily/spiritual well-being. We conclude this paper with discussions on theoretical and practical implications of our findings, limitations, and future research prospects.

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Literature review

Health is a principal component of human subsistence, and it, therefore, constitutes an important domain of research in social sciences. Extension of medicine into non-medical spheres not only intensifies the meanings and notions of health but also complicates them (Kristensen *et al*., 2016). In this theoretically rich area of study, the convergence of three particular phenomena is of significant interest to this paper: medicalization, lay perceptions of health, and digital medicine. We start by providing a brief review of the literature on medicalization, as it marks a milestone in understanding how the discourse of health has been shaped in industrialized societies. Next, significant findings of research that focused on lay discourses of health in attempt to understand perceptions of ordinary people of their bodily and spiritual well-being as compared to what the institution of health imposes, how these perceptions are socially constructed, and to what extent they are subject to messages flowing from the traditional and new media are outlined. Last, we summarize major trends in digital health as an agent of change in contemporary health discourses as portrayed in existing literature.

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1. Medicalization

Medicalization is a term coined by Irving Zola, who investigated the medical authority in industrialized societies and concluded that medicine is a major institution of social control charged with iatrogenic effects (Zola 1972; Illich 1976). Similarly, Foucault (1984, p. 283) argued that "medicine, as a general technique of health even more than as a service to the sick or an art of cures, assumes an increasingly important place in the administrative system and the machinery of power." Medicalization, which literally means to make medical, reflects a practice of defining and treating nonmedical problems as illnesses or disorders (Conrad, 1992), promoting "a process whereby more and more of everyday life has come under medical dominion, influence, and supervision" (Zola, 1983, p. 295). In this way, medical authority wins the consent of the society, and gives medicine the power to interfere with social life by identifying what is normal and abnormal physically, emotionally, and socially (de Swaan, 1990). The hubris of modern medicine is thereby echoed in objectification, commodification, and standardization of health, losing humanism in medical practice, depersonalizing care, and replacing holistic approaches with bureaucratic regulation and control (Illich, 1976; Timmermans and Almeling, 2009).

The concept of control is central to medicalization and its critiques: Foucault (1984), for instance, emphasized the hegemony of physicians as the decision makers, as the unified health systems discouraged people from coming up with their own solutions to particular health problems. Other critics argued that medicine dependence would create an obsessed society about health, and elicit the medicalization of life by minimizing the power of individuals in self-determinism (Illich, 1976; Atkinson, 1995). However, because the superiority of the physician over the patient was perceived to be a miniscule representation of the power of the State

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replacing the sovereignty of Death (Maturo, 2012), the suppression of patient capacity to make her/his own decisions was regarded a beneficial feature of modern medicine for decades (Vicdan and Dholakia, 2013).

Over time, the drivers of medicalization have shifted. Healthcare became increasingly marketized in line with neoliberal prescriptions, accompanying the withdrawal of the state from many areas of social provision. In the post-welfare society, health is increasingly regarded a commodity, while the patients of the past are now referred as health care consumers. The commodification of health is clearly vested in the neoliberal ideology of the free market, which champions the idea that "medical services should be treated just like any other commodity that can be efficiently produced and consumed under competitive market conditions" (Lupton, 1997, p. 373). This approach apparently translates to an idea of health that is achievable for everyone, as long as they can afford it. From a sociological viewpoint, commodification accompanies objectification and standardization of health, serving the broad concept of medicalization in which all are rooted (Timmermans and Almeling, 2009). Consequently, the interaction between patient and physician is now being transformed into an objectified and standardized market exchange between a consumer and service provider, where the individuals are cognized as the locus of responsibility and control for their own health (Andereck, 2007; Kristensen *et al*., 2016). However, a recast of roles in this relationship has only altered the form of commodification: today's health consumers are situated in a culture that calls for an "imperative of health" (Foucault, 1984, p. 277; Lupton, 1995), as health-consciousness is boosted by governments, media, and other agencies as the ultimate goal in an individualized quest for wellness. Consumer culture also enhances the pursuit of health by strengthening it with ideals of autonomy, freedom, and the exercise of personal choice (Adams, 2013). Furnished with these values, the society now

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recognizes the body as a project, which should be externally and internally monitored, nurtured, and maintained as fully functioning (Shilling, 1993). Healthism is fostered as a fashioned lifestyle that prioritizes health and fitness over anything else (Crawford, 1980). These appear to mark a change in understanding health as the responsibility of the individuals themselves in which the individual has to actively seek information in an effort to apply it to a healthier lifestyle, rather than remain as a passive recipient of health-related messages imposed by the physician in minuscule contexts, and by the State on a larger scale. This change in the discourse of health inevitably reflected itself in literature, especially since the mid-80s. Within this scholarly vein, studies focusing on the individual perceptions of health are central to this paper to better conceptualize the dynamics of health discourse in daily life.

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2. Perceptions of health

Medical sociology has situated research toward illness behavior for a long time, and it was only by the 80s when health itself became the focus of such studies (Pierret, 1993). Not surprisingly, this shift in attention was linked to the pivoting role and value of health for the modern society. This novel value eventually reflected itself in a scholarly concern to understand and conceptualize how people perceive and conceptualize health. Subsequent academic work developed in two major veins. The first stream-oriented research to examine the perception of health from the patient's perspective; that is, how the patients perceive their own health status, commonly on a continuum from poor to good, and how this perception correlates with the treatment dynamics and outcomes (e.g., Miilunpalo, 1997). This vein apparently had a medicalized perspective, and it, therefore, is beyond the scope of this study. The second vein, on the other hand, preferred to explore discourses of health, particularly by lay people, and it therefore constitutes the subject of this review.

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Early studies to understand the health behavior of lay people were directed at people who have chronic medical conditions, diseases, or disabilities (Lawton, 2003). Herzlich (1973) pioneered in investigating healthy individuals' perceptions of health, and his study revealed that illness and health co-exist in a negative and positive duality. Respondents of this study identified health with the absence of disease, as a possession for the future, and a positive state of equilibrium. Following studies arrived at similar conclusions, with the earlier work focusing on the demographical factors as indicators of these interpretations (e.g., Pill and Stott, 1982; d'Houtaud and Field, 1984), and the later adopting a sociocultural lens to develop a broader theory of lay perceptions of health (e.g., Van Dalen *et al.,*1994; Lu, 2002). In general, most studies in this vein highlight the multidimensional and subjective explanations of health (e.g., Wright, 1985; Blaxter, 1990), indicating that health actually refers to a socially constructed system of interpretation (Pierret, 1993). More specifically, multidimensionality and subjectivity suggest that lay views of health differ from a mere "absence of illness," and may imply a variety of understandings such as functional ability, equilibrium, freedom, lifestyle, policy, and priority (e.g. Hughner and Kleine, 2004). Research also highlights the fact that these interpretations are not only influenced by the individuals' demographical, psychological or experiential backgrounds, but also by the sociocultural context they live in, from which they obtain health-related information that supports the construction of an individualized understanding of health (Wong and King, 2008).

A review by Hughner and Kleine (2004) reveals how these social constructs are integrated into discourses of health. Apart from micro-contextual influences, health is regarded as both a liberating and constraining force to perform in the society, and its maintenance is closely dependent upon one's relationships with others. Within this broader context, the modern society enforces the individual to place health as a top priority and adhere to a self-care regimen using

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several instruments. As a result, lay perceptions of health also mobilize personal consumption preferences, as put forth by some recent studies. Employing such a consumer lens, for instance, Wang *et al*. (2010) showed that consumers hold lay theories about the nature and state of their well-being, which guides them through their consumption decisions for alternative remedies. McFerran and Mukhopadhyay (2011, 2013), and Beruchashvili *et al*. (2014), similarly offered a possible insight into the conceptual link between implicit understandings of individuals own health status and their consumption related goals and behaviors. Navigating through such narratives of health, consumer culture theorists have also recently started to dig into the collective practices of consumption community formation that is guided by individual perceptions of one's well being. Among these, Thompson and Troester (2002) pioneered in examining these narratives, in which consumers relied on each other with regard to consumption experiences in a natural health context, and helped them establish a shared value system that is organized around a common set of consumption goals and practices. In this consumption microculture, the authors note, "Individuals use these microcultural frames of reference to interpret their consumption experiences" (p. 551), and employ them as potential tools to achieve several outcomes regarding their overall well-being and self-balance. Such microcultures increasingly emerge in other health-related contexts, such as homemade food (Moisio *et al*., 2004), healthy food consumption (Östberg, 2003), and weight loss (Moisio and Beruchashvili, 2010), and help the creation of a health-conscious consumer through responsibilization, a process in which the consumers "are reconstructed as free, autonomous, rational, and entrepreneurial subjects who draw on individual market choices to invest in their own human capital" (Giesler and Veresiu, 2014, p.841-2).

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Not surprisingly, mass media plays a leading part in enhancing the role and responsibility of individuals in this self-care regimen, by educating them to be better-informed consumers, and promoting what is acceptable and desirable with regard to the body, health, and well-being (Lupton, 1999; Conrad and Leiter, 2004). The role of mass media in meaning-making related to health, illness, and medicine has received substantial interest regarding scholarly research since the mid-1980s (e.g., Turow and Coe, 1985). Notably, a significant part of these studies is undertaken by researchers in health marketing and communications, and to a large extent focus on the messages to which individuals are exposed (Kline, 2011). As Lupton (1999, 2012) argues, the lack of research that employs a more critical and theoretically informed perspective into the representation of health, illness, and medicine in the media is surprising. Moreover, the advent of information technologies and their impact on digital health did not receive sufficient attention in terms of exploring reconstructed meanings, understandings and discourses surrounding health and well-being (Miah and Rich, 2008; Lupton, 2012). As digital health is of particular interest to this paper, we provide a brief review of this concept and relevant scholarly agenda before presenting the research gaps addressed by our work.

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3. Digital Health

Digital health is defined as "the use of information and communications technologies to improve human health, healthcare services, and wellness for individuals and across populations" (Kostkova, 2015). Also referred to as mHealth (for mobile health), e-health, or health/medicine 2.0, it signifies the convergence of life sciences and technology to transform medicine, and revolutionize global markets. The outreach of digital health is broad, ranging from websites discussing health related issues to telemedicine, from online support groups to wearable devices.

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The scope of digital health developed in parallel to the stages of web technologies, and so did relevant studies, as explained by Lupton (2016, p. 50):

> "[S]ocial scientists have been researching digital health technologies ever since the Web 1.0 era began to generate a multitude of websites discussing health and medical issues. Web 2.0 technologies are far more interactive and mobile than Web 1.0, including social media platforms, wikis, geolocational applications, tagging of content, wireless computing technologies (Wi-Fi) and mobile devices such as smartphones and tablet computers that can provide almost universal connection to the Internet. Some commentators are beginning to remark upon the emergence of the third generation of the World Wide Web, Web 3.0 (the 'semantic' or 'intelligent web'), involving the Internet of Things, in which sensor-embedded and other 'smart' technologies are increasingly interlinked and able to exchange information with each other."

Obviously, the advent of digital health implies major transformations in the entire infrastructure and culture of medicine (Miah and Rich, 2008). Since Web 1.0, which fueled a rapid expansion of health-related sources in the cyberspace, both patients, and their carers utilized the Internet as a self-help resource (Burrows *et al.*, 2000). The introduction of social media platforms and the expansion of online communities enabled sufferers to share their experiences, knowledge, and feelings with regard to health in general and particular illnesses, to navigate for alternative approaches, and to mentor others going through similar circumstances (Walstrom, 2000; Pitts, 2004). A significant implication of these possibilities is novel forms of empowerment in health consumption, which trigger new opportunities in understanding a variety of discourses surrounding health (Vicdan and Dholakia, 2013).

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The shift in the traditional concept of the doctor-patient relationships and the role of media in this transformation constitute a focus in research since the 80s. Several studies exploring how health knowledge is built and understood based on the portrayals of healthcare personnel, patients, diseases and alike in newspapers (e.g., Coyle and Morgan-Sykes, 1998), magazines (e.g., Lyons and Willott, 1999), movies (e.g., Wedding *et al.,* 2011), TV dramas (e.g., Parrott and Parrott, 2015), and documentaries (e.g., Hodgetts and Chamberlain, 1999) are available in literature. As the Internet becomes a central source of information, research now expands to include new media, such as blogs and social media platforms, as an outlet and forum of health discourse. However, as Lupton (1999, 2012) observes, most of these studies are undertaken by researchers in health promotion and health communication, and therefore direct their attention to document the coverage of health issues in traditional and new media for the ultimate purpose of developing and delivering the right messages in regards to a particular health aspect. In the same vein, medical authorities, intervention programs, and commercial organizations are mostly under scholarly scrutiny as the generators of health messages. Within that available research in the literature, the focus is mostly on "computer-mediated social support groups" (Burrows *et al.,* 2000, p. 106), that is email groups, electronic networks, and online support groups, where the patients share their experiences of health and illness (Ferguson, 1997; Hardey, 2001; Vicdan and Dholakia, 2013). Yet, there is presently a significant gap in the literature on meanings of health as understood and constructed by healthy lay people, mainly employing social media, which deserve further exploration in the quest to understand how consumer culture is embodied in the discourses of health. Therefore, in contrast to existing literature that investigates the meanings of health through people with chronic illnesses or disabilities, this study specifically aims to discover how healthy lay people define and experience health by exploring self-defined health

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content as it is shared with others in the digital world. In this attempt, this paper also offers a novel methodology that employs network analysis to extract the meanings of health and the relationships between these meanings, as a significant contribution to theory with details provided in the next section.

Methodology

The aim of this paper is to explore meanings of health as constructed by healthy lay people, particularly using social media. To this end, this study employs a qualitative inquiry on textual and visual data generated by ordinary individuals on Instagram, a popular social media platform for sharing photographs and videos. In line with Mayring's (2004, 266) assertion that content analysis can be performed on various forms of data including textual, musical, pictorial, or plastic, this paper utilized textual and visual content analysis.

Instagram is chosen as the data source as it has attracted 500 million monthly active users within three years (Statista, 2016), and its growing engagement and popularity allow for collecting organically formed data where people "live, learn, work, and play" (Galica and Chou, 2014). As suggested by Highfield and Leaver (2014), Instagram's image driven data, which combines visual and textual imagery is crucial to make sense of the phenomena in hand entirely. Duggan (2015) noted that Instagram is different than other social networking platforms, as it offers the possibility to gather data from various socio-demographic groups in multiple geographies, which allows researchers to collect data with a greater social, economic, and racial diversity as compared other social networking platforms. For example, internet users aged 16-64 that have an Instagram account has reached 34% in the Middle East & Africa, followed by Latin America (33%), North America (25%), Europe (16%), and Asia & Pacific (16%) (GlobalWebIndex, 2014). Aslam (2017) reported that 80% of Instagram users are from outside of the U.S., with

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males and females in this group represented by 32% and 68%, respectively. Additionally, Greenwood et al. (2016) showed that among total Internet users, 32% use Instagram and among that 59% comprises adults who are aged 18 to 29. Lower income quartile (less than US$30,000/year) was represented by 38%, middle-income quartile (US$30,000-$74,999/year) by 64%, and top income quartile ($75,000/year) by %31. Users who live in urban, suburban and rural areas are listed as %32, %28 and %18 of the total, respectively. These statistics show that using Instagram as a data source in this research offered us several advantages including collecting naturally occurring global topical data from an actively engaged diverse population in a time effective way.

Visual and textual data collection procedure was organized as follows. Visual data included images posted on Instagram tagged with the hashtag #health. Textual data included all other hashtags attributed to a particular image. As Schlesselman-Tarango (2013, 8) argued, "the user-generated tag […] is a valuable representation that provides contextual information surrounding the perception and experience of the image with which it is directly related." In this context, Instagram also served as a useful research platform for exploring user-generated tags associated with images. Previous research revealed that authors use hashtags for several reasons, such as eliminating disambiguation (chips #futurism versus chips #junkfood), identification of named entities (#sf49ers), expressing sentiments (#dislike), and topic annotation (#yoga) (Weston *et al.,* 2014). Moreover, tags allow users and viewers to understand better the *aboutness* of the image posted (Schlesselman-Tarango, 2013). Therefore, the #health hashtag was selected as the starting point for this particular study to allow for a better understanding of how lay and healthy individuals construct and reproduce the meanings of health.

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To collect images and their respective hashtags, Google Docs add-on *Supermetrics* was used to extract all hashtags posted under the pictures including #health into spreadsheets. The collection of hashtags was systematized on five different days in May 2016, at 6-hour intervals to cover different global time zones. Images from Instagram were extracted by capturing screenshots. Each iteration consisted of 100 images posted on Instagram, which is labeled with #health, among other hashtags. At the end of this process, a total of 2,000 images posted with the #health hashtag were collected (4 collection sessions per day, for five days), and all hashtags associated with each image by the Instagram user were grouped using a spreadsheet. Before further analysis, we removed posts, which had at least half of their hashtags in non-Anglophone languages. As a final figure, we had 1,951 posts to be included in the analysis. To check our results and eliminate seasonal effects, we replicated the study six months later, in November 2016, by repeating the same process over a 24-hour period and collecting a dataset of 400 Instagram posts, which were extracted using the same methodology. Our findings in this replication suggested a similar pattern of health discourse, therefore warranting triangulation of data.

Data analysis was realized in two subsequent stages. The first step involved a network analysis of textual data, which is the process of investigating textual structures through the use of networks. Textual network analysis utilized in this study is an extension of Social Network Analysis (SNA), which traditionally focuses on persons as central units with the aim of examining social structures. Here, we chose to focus on text itself as a network of meaning, and used hashtags for the nodes of the network rather than persons, to examine how words are clustered and connected to each other. As compared to a traditional content analysis, textual network analysis allows for a better visualization of text structures and fields of meaning in

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addition to metrics of their formation, particularly when a huge corpus of text as obtained from social media needs to be investigated.

In this context, the relationships between text nodes, which are hashtags for this study, were examined by employing NodeXL Network Graphing Tool, a free and open add-in for Microsoft® Excel. NodeXL is a network analysis application that supports network overview, discovery and exploration for general purposes, and is particularly used with network data extracted from social media platforms, such as Twitter, Flickr, YouTube, Facebook, and Wikis (Hansen *et al.,* 2011). However, as is the case in this study, NodeXL can also be utilized to explore word association networks within text (Smith, 2011b) because, in its very essence, the application enables visualization of networks and provides statistics and metrics of their formation. Moreover, because the application offers simple filtering and flexible display attributes, important structures in the networks can be highlighted very quickly. In this context, we utilized NodeXL to comprehend better and visualize the networks that are formed around alternative meanings of health. To this end, hashtags attributed to each image were collected in a spreadsheet, where each row corresponded to a particular image and hashtags affiliated with it, but excluding #health. We then followed the methodology recommended by Smith (2011a), which utilizes a macro to illuminate whether two or more words appear alongside and generates the vertex data required by NodeXL. This procedure produced a total of 45,272 unique edges for 1,951 hashtag groups that performed alongside the #health hashtag.

From a methodological point of view, network analysis tools create a system in the form of edge lists, which refer to pairs of vertices, making up the nodes in the relationship. Each vertex represents an entity in the network, and each edge, or link, connecting two vertices is a representation of either a bidirectional or a unidirectional relationship (Smith et al., 2009).

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Software packages used to visualize these relationships calculate statistics and metrics about individual vertices, and produce network graphs revealing how nodes in the system are connected and clustered.

In our study, each edge represents a connection event between two hashtags within the data sample period. These edges and respective vertices were then imported into the application to visualize the network and clusters generated around interrelated tags. We utilized the automated steps for extracting networks in NodeXL, which count and merge duplicate edges, group clusters, and visualize the final networks. The Clauset-Newman-Moore clustering algorithm was used to create sub-groups from a larger population. This approach allows for less cluttered graphs when there are many isolated individuals, and therefore is the general approach recommended for similar studies (Golbeck, 2015).

The second step of the analysis included a content analysis of the collected images to verify and elaborate the findings of the textual analysis explained above. Qualitative research focusing on visual images to explore the experiences and meanings is already established in various areas of social sciences (Frith *et al.,* 2005), particularly anthropology and sociology (Harper, 2002). Barthes (1977) argues that there is a direct relationship between the images and the content of its message, as he separated the characteristics of visual messages as denoted (objective) and connoted (subjective). According to Barthes (1977), denoted message refers to the literal reality as it is portrayed in the photography, and connoted message to the inferred symbolic meaning of the message that is influenced by individual's social and cultural references. Barthes (1977, p. 18) contends that "[o]f all the structures of information, the photograph appears as the only one that is exclusively constituted and occupied by a 'denoted' message, a message which totally exhausts its mode of existence. This unique status makes a photograph paradoxical sort of sign

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because it is simultaneously objective and invested, natural and cultural." Given that the primary research question addressed by this study pertains to the meanings of health for ordinary individuals, Instagram serves as an ideal context, as it allows for exploring how these meanings are constructed through both visual and textual mediums. Although the data collected from this medium is rich enough to allow for a variety of qualitative analyses (for instance, semiotic analysis), the use of a traditional content analysis was deemed sufficient as it primarily functioned to confirm the findings of textual network analysis.

To alleviate researcher biases and to improve the consistency of our findings, investigator triangulation method was also used. In this context, one researcher analyzed the textual data, while the other analyzed the visual data. Researchers then cross-checked their results from different data sources. Researcher triangulation helped map out the phenomena, enrich the analysis, gain multiple perspectives, and capture more details as suggested by Ritchie (2003). The findings of the study, supported with examples from visual and textual data, are presented in the following section.

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Findings

The first set of results was obtained by running NodeXL for 45,272 edges (hashtag connections), which were generated through a specialized macro to identify word associations within text from 1,951 hashtag groups as explained in detail in the methodology section. In this context, NodeXL extracted 3,083 vertices (i.e., nodes that exist in a network graph) and plotted these into five major networks that are associated with #health. Additionally, there were more than 20 minor networks, in which only a few vertices were found to be related to each other. However, because they offered small value to explain and elaborate the understanding of health, they were omitted from further analysis. The remaining five primarly nodes were then analyzed for the density of

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subgroups they create, and the labels of those with denser subgroups were set to be fully visible to enable a less cluttered plot. Other nodes with looser subgroups were also kept, but their labels were not shown to maintain the graph readable and printable. The maximum geodesic distance and the average geodesic distance were calculated to be 4.0 and 2.21, respectively, which indicated the nodes in each network are close and inter-node cohesion is high. In other words, connecting the two furthest nodes from each other requires four connectors with two intermediate nodes between the most distant nodes, which means the nodes of this network are in relatively close regarding reaching each other. When the average geodesic distance is small, as it is in this case, it means that the information is exchanged pretty quickly in the network and the network is fully connected, which allows all actors to be reachable from all others. In this social network groups, a post from anyone on Instagram will eventually reach everyone in the network. Both considered and omitted graphs are displayed in figure 1.

Insert Figure 1 about here

Figure 1 demonstrates how healthy lay individuals associate health with four main themes, food, fitness, fashion, and feelings, which are labeled accordingly following a careful investigation of all hashtags plotted into individual clusters. Cluster 1 precisely refers to food, with prominent nodes such as #carbs, #superfoods, #glutenfree, or #vegandiet. Notably, clusters 2 and 3 were both labeled as fitness, as the denser node subgroups in these clusters pinpoint this particular theme. Yet, in cluster 2, the discourse of fitness is much more associated with workout (e.g., #gym, #weights, #muscles, #bodybuilding, etc.), whereas in cluster 3 there is an inclination to describe fitness in its relation to communal aspects (e.g., #fitmoms, #bbgfamily, #runningcommunity, etc.). Cluster 4 evolves around topics that relate to fashion and respective commodities (e.g., #beauty, #style, #makeup, #shoes, #travel, #backpacking, etc.), and cluster 5

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clearly delineates (mostly positive) feelings associated with health, such as #courage, #success, #passion, and #inspiration.

The graph produced by the textual network analysis also offers some insights on how these meanings are constructed. As McCracken (2005) asserts, the meaning-making process in a consumption context is particularly based on the distinction between information and meaning, and how consumers process these two. According to the author, information is related to disintegration of the compound into small and workable bits, whereas the meaning making concerns the assembly of these information bits into more complex and abstract wholes. Consumers then use these meanings, which are embedded into products, brands, and other experiences relevant to marketplace, in making sense of their worlds. Our findings suggest a similar pattern, where the notion of health is first disintegrated into tiny bits of information that pertain to numerous items, ideas, and psychological states denoted by single dots on the graph, and then turned into bigger chunks of meanings clustered around several themes.

To complement the findings of the network analysis and better interpret the data, we simultaneously employed a visual content analysis using only the images collected with the same procedure. One researcher worked on the visual content analysis, which covered all 2,000 images posted with the #health hashtag to identify how health is interpreted by consumers. All images were printed out, cut, sorted, and initially analyzed one-by-one to get a general sense of the data. Next step included an open coding process to identify commonalities between images and conceptualize themes. The process involved checking all 2,000 images one by one and noting all patterns that emerge when analyzing the data by tagging descriptions to the pictures. As Creswell (2012, 248) suggested, after developing the codes and counting the frequency for each category, themes, which are "similar codes aggregated together to form an idea in the

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database" began to emerge. This process resulted in ten categories that were included in the codebook, which are food, fitness, fashion, feelings, friends and family, fun, beauty, technology and wearables, medical health, and porn. 101 of the images were not included in the analysis as they were considered irrelevant, and therefore did not load in any of the above categories. Table 1 summarizes the statistical distribution of categories obtained through the visual content analysis.

Insert Table 1 about here

In addition to open coding the visuals, we uploaded all captured hashtags from 2,000 Instagram posts to NVivo 10, which is a qualitative data analysis software that helps building data into themes and codes (Ahlquist, 2015). We ran a word frequency analysis with NVivo for the 2,000 posts that consist a total of 49,264 hashtags, and identified the most frequently used hashtags that accompany the #health hashtag. Comparing NVivo word frequency results with the open coding themes indicated a perfect fit with the four main categories formed by the first researcher. To better depict how each image corresponds to these categories, Table 2 presents the exemplary hashtags and pictures for each category.

Insert Table 2 about here

Following the completion of analysis, the gathered data from visual and textual data sources was studied looking for any thematically parallel findings. The final phase of the study, therefore, involved elaborating on the results of the first two steps, identifying relationships between themes, and how these translate into construction and reconstruction of meanings, understandings and discourses surrounding health and well-being. Based on this combined analysis, we propose a two-axis model as displayed in figure 2 to explain the digital

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consumptionscapes of health as generated around the discourses of healthy lay individuals on social media.

Insert Figure 2 about here

The proposed model maps four themes extracted from the analysis, fitness, food, feelings, and fashion, with respect to their degrees of representation on a commodification/communification versus bodily/spiritual well-being. In this model, commodification refers to "the economic and cultural processes through which objects become commodities" (Southerton, 2011), where consumers reflect on the meaning of a particular health aspect mostly through commodities. In contrast, communification is used to denote the simultaneous building of community while generating meanings of a phenomenon, which pertains to health in the current study. The vertical axis corresponds to the dichotomy of body and spirit, which are considered to denote traditional compartments of health (Womack, 2009). In this manner, we identified these four themes to represent either a commodification or communification of bodily or spiritual well-being as are further discussed below.

1. Food: Commodification of bodily well-being

In the era of food porn, it is not surprising that the first representation of health is food. Our findings reveal that around 32% of the visual posts that include the #health hashtag display a meal plate, supplements, herbs, healthy food recipes, veggies, fruits, or weight loss pills. In this context, maintenance of bodily health was predominantly linked to consumption of healthy food alternatives and supplements, indicating a meaning-making process through commodities.

In this category, clean eating is a topic that is usually highlighted. An emphasis on organic, hormone-free, wholesome food and a stance against corporate fast food companies are popular

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representations of health. Juicing is promoted as a trendy way of healthy eating. Easy recipes with simple ingredients, bright colors, and the in-your-face angle of food pictures are used as an inspiration of clean and healthy eating habits. Moreover, food is mostly linked to weight loss and having a fit body, while being fat is interpreted as being unhealthy. This perception of health explains many visuals of weight loss pills, fat-burning herbs and teas, and muscle-built supplements tagged under the #health hashtag.

A previous study that explores the history of food porn revealed that fruits, bread, pastries, salt, and meat were depicted the most in historical European and American paintings, while vegetables did not make such an appearance (Wansink *et al.,* 2016). On the contrary, Instagram posts in our study were dominated by presentations of green eating with a highlight on vegetables, which may refer to a break from the traditional and old forms of food for a healthy lifestyle. Another remarkable finding in this category was that the consumers devoted a considerable effort to capture eye-catching photographs of their healthy food. This attitude may be linked to previous findings in food consumption literature, which suggest that "the rituals enhance the enjoyment of consumption because of the greater involvement in the experience that they prompt" (Vohs *et al.,* 2013, p. 1714). In this context, a ritualized expression of consuming food, such as taking a picture of it before eating, which includes all the bright-light seeking and angle tweaking time, makes the food taste better and create favorable outcomes for less pleasurable (i.e., healthy) foods (Coary and Poor, 2016). Similarly, sharing healthy food pictures on Instagram may be considered a ritual that could enhance the pleasure and rationalize the consumption of this particular food that will not be preferred otherwise. Also, posting good diet pictures on Instagram accompanied with relevant hashtags serves as a means of documenting consumer's healthy lifestyle and consumption patterns. Respective post engagement, such as

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likes and comments under the photographs, works as the means of support, appreciation, and motivation for the individual while inspiring others to eat healthier and share *their* food (Coary and Poor, 2016). This network of food-related posts constitutes a major component of health discourse in our data, notably through the display of commodities.

2. Fitness: Communification of bodily well-being

Fitness appears to be another prominent representation of health in our findings. This category fits to second and third clusters extracted in the network analysis, and it occupies 23.4% of total images posted under the #health hashtag on Instagram. Photographs from the gym and of fitness equipment, before and after pics of physical transformation, appealing body pictures of both sexes, and mirror selfies at the gym are the main visuals in this category. Photographs that hide the face but focus on abs, chest, and hips and visuals about training and fitness experience are also common. Sweaty pictures of fit and active individuals in the gym during training are occasionally accompanied with hashtags to provide motivation for the users and their followers. In this category, the prominent representation of health is a fit, lean, well-built, sexy body, where fitness is communicated as an ideal way for bodily well-being, and people are encouraged to spend more time and effort to become members of this healthy community.

The communal aspect of fitness is even more highlighted in cluster 3, and how this community ties to workout is traceable through an analysis of the visuals. The fitness community is composed of two groups of individuals. The first group includes professional athletes, personal trainers, and models that see themselves as an inspiration for healthy living. These people try to engage with their followers through hashtags and comments, and encourage dedicated new starters to post their sweaty training selfies, favorite gym outfits, and post-workout shakes and meals. Some of these trainers even gained a celebrity status on Instagram. For instance, Kayla

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Itsines, a personal fitness trainer from Australia, serves as a perfect example to grasp how fitness communities are endorsed in constructing digitized meanings of health. Itsines is followed by 5.8 million Instagram users through her *Bikini Body Guide* (BBG) and $20-per-month *Sweat with Kayla* App. Her followers are so devoted to Itsines that they formed the BBG community, calling themselves "Kayla's Army," "BBG moms," "BBG Family," coming together to work out in different countries. The members of this group frequently label their physical transformation pictures they post on Instagram as #KaylaMovement or #BBGmovement. BBG community works out together following same BBG routines, posts transformation pictures on Instagram with relevant hashtags, and comment on their photographs to track each other's progress. When Itsines travels to host workout events in the major cities such as London, Los Angeles, and New York, many of her followers also go to work out with her.

Ordinary people make the second group of fitness communities, but they do not always swarm around celebrities as in the previous example. Our findings point to groupings of healthy lay people who want to show their physical progress, seek for appreciation and recognition for their bodies, and ask for support from followers to get more motivated and inspired. Those posts equate health to beauty, which frequently translates to skinny bodies for women and muscular bodies for men. Community aspect around beautiful bodies is emphasized with hashtags such as #fitnesscouple, #selfesteem, and #teamshape. Posting personal fitness routines can even turn into a career path when a sufficient number of followers begin to ask for fitness and motivation advice to achieve the perfect body.

While most of these tags expose how individuals build a community that constructs the meaning of health around fitness, commodification of the phenomenon is also identifiable. This situation is particularly the case when the posts refer to expensive training programs with personal

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trainers, fat burning sessions in beauty centers, body tuning cosmetics, and plastic surgeries. Around 2% of pictures labeled with the #health hashtag are about a glowing skin, shining hair, bright nails, and perfect make-up accompanied with the right products or treatments that must be purchased to be healthy.

Another 1.5% refers to technology and wearables that can be included in the fitness category, as their content mainly focuses on daily fitness reports of smartphone apps, screenshots of health tracking wearables such as Fitbit or iWatch, do-it-yourself-at-home instructions for the perfect workout, and downloadable training e-books. In general, Instagram posts that fall under the fitness category appear to be an outlet to show others that the individual has a healthy life, attract attention, gain recognition and approval as well as to maintain motivation and to keep on track through follower feedbacks.

3. Fashion: Commodification of spiritual well-being

Fashion is about belongingness and being noticed, as clothes are the symbol of taste and status (Featherstone, 1987). In our data, around 7% of the posts make an emphasis on fashionable commodities and the positive mood they invoke. Network analysis identified a complementary cluster that includes similar nodes. Consequently, this category was understood as the avenue through which the individuals generate novel meanings of health around clothing, accessories, make-up, outfits for particular activities, and the positive mood that arises from engaging with these, which they take as a route to spiritual well-being.

The most common visuals in this category include mirror outfit photographs taken with a smartphone showing stylish clothing or outfit-of-the-day. Pictures of shoes, whether they are sneakers or high heels, with a focus on muscular legs, body-conscious dresses that reveal curves of the body, shopping bags exposing brand names or logos, and stylish wardrobe pieces arranged

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to resemble a fashion magazine cover, picture of the user laying on the floor or the bed are other types of visuals that we encounter in this category. Similarly, hashtags such as #shopping, #fashionista, #cosmetic, #jewelry, #haircut, #awesomeness, and #joy appear alongside #health in this group. Within these posts, a remarkable number of individuals tend to post the outfit-of-the-day pictures particularly when they feel that their look is stunning. In this category, the emphasis is on outfits reflecting the mood, healthy lifestyle, and overall confidence. Health is associated with "looking good for feeling good," which has definite resemblances to the fitness category. The difference, however, lies in the dominance of fashionable and stylish possessions in the fashion category, rather than that of a fit body to be achieved in the fitness category. The role of clothing and accessories in evoking particular moods may be traced in "enclothed cognition," a term coined by Adam and Galinsky (2012, p. 918) to describe the systematic influence that clothes have on the wearer's psychological processes. According to the authors, enclothed cognition involves "two independent factors—the symbolic meaning of the clothes and the physical experience of wearing them," through which the individuals are enabled to adopt characteristics associated with clothes and encouraged to share the adapted mood with others (Pine, 2014). In this context, objects of clothing are instrumentalized to express positive states of mood, which is considered a reflection of spiritual well-being, which is good health, by the users.

4. Feelings: Communification of spiritual well-being

Final representation of health is feelings, which takes up 13.8% of the total posts. This category mainly consists of motivational quotes about maintaining good health and the depiction of a healthy life that evolves around positive feelings and energy of love, spirituality, and inner peace. "Too often we underestimate the power of a touch, a smile, a kind word, a listening ear, an honest compliment, or the smallest act of caring, all of which have the potential to turn a life

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around" by Leo Buscaglia, or "Stop acting so small. You are the universe in ecstatic motion" by Rumi are two exemplary quotations that represent the attempt to express one's inner power and the importance of feelings for creating change for the individual and others. The majority of posts highlight the importance of loving oneself, showing gratitude for life and finding Zen, with a remarkable number of visuals showing yoga and meditation experiences. #happylife, #proud, #faith, #challenge, #courage, #mindfulness, and #dreamer are only a few of the hashtags that appear alongside #health. Posts relating to friends and family are also included in this category, as appreciation for life and gratitude for loved ones are common themes in reflecting upon health. For these individuals, health relates to a community that enjoys being together, and therefore meanings of health are constructed around communification of spiritual well-being. Many visuals in this category are depictions of having a good time with family, kids, and friends, showing smiling happy faces. Health through happiness is sought in big dinners, celebrations, and trips. DJ parties, music festivals, outdoor group sports such as rafting, hiking, and camping are tagged with health as well.

A collage of pictures that accompany the #health hashtag, capturing the essence of four quadrants is presented in Figure 3. Network analysis identified 2,241 of 3,083 vertices (73%) in either of these four categories, and visual content analysis evaluated 91% of visuals to fit into a quadrant. Apart from these four categories, 1.1% of the Instagram posts were medical treatment pictures including dental care, vaccine, and cosmetic surgery. This group also included posts about mother and baby health, warnings about specific drugs, herbal therapies, recipes for homemade cosmetics and folk medicine, alternative and complementary treatments such as acupuncture, chiropractic medicine, energy therapies, Reiki, and homeopathy. Of the remaining,

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2.4% of the posts were related to porn, and around 5% did not load to any of the categories mentioned, and therefore discarded as irrelevant data.

Insert Figure 3 about here

General discussion

Along two studies, we investigated how healthy lay individuals construct alternative meanings of health, by employing Instagram as a data source. Our findings demonstrate that digital discourse of health is clustered around four Fs: food, fitness, fashion, and feelings. A closer look at these clusters reveals that these themes can be mapped on a four-quadrant model with respect to their degrees of representation on a commodification/communification versus bodily/spiritual well-being.

Meanings of health are often constructed and reproduced through consumption objects when a theme is positioned high in commodification. Based on our findings, we suggest that food and fashion are two such themes, which are built around consumption of healthy meals, supplements, and herbs for the former, and of clothes, accessories, and cosmetics for the latter. Communification, on the other hand, describes a meaning-making process that is rather grounded on community building around a particular theme. Our findings indicate that an understanding of health through fitness and feelings is rather realized through this course, which endorses membership in a relevant community or group.

1. Theoretical implications

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Research on health from a consumption perspective has been around for over four decades, facilitated greatly by the expansion of medicine into everyday lives, especially as an agent of social control through medicalization. In the following decades, neoliberal policies called for the withdrawal of the state from provision of health care services, transforming patients into consumers, changing the roles of patients and physicians, fostering new streams of consumption research. However, the majority of available studies focused on healthcare industry and the dynamics of the exchange relationship that takes place within, such as physician preference or patient satisfaction studies, which are mere extensions of similar research that are undertaken in other industries. An alternative stream in recent decades focused on the flow of health information, and particularly mediatization of health, to understand how the meanings of health are generated, communicated, and influenced by a variety of media sources (Kline, 2011). Digital health studies may be considered a sub-domain of this stream, and its current spotlight falls onto topics such as online health-information-seeking behavior, and digital apps and wearables that are used to monitor health.

Our knowledge about the meanings of health as constructed and reflected by healthy lay people is very limited (Lupton, 2012), and even more so about how the construction, negotiation, and dissemination of these meanings are realized through digital media (Miah and Rich, 2008). We contribute to this area by integrating consumers' meaning-making literature into health perceptions, operationalizing social media as a channel through which they build and communicate their healthy self-images.

Consumer products are for long considered as the extension of self (Sartre, 1943; Belk, 1988), acknowledging the symbolic value of commodities as magical vessels of meaning to connect consumers with memories of the past (e.g., Belk, 1991), aspirations for the future (e.g., d'Astous

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and Deschênes, 2005), and the desire to align with the values of the society (Goldman and Papson, 1996). These symbolic meanings allow consumers to build their self-image and communicate it with others (Dittmar, 1992; Gabriel & Lang, 1995; McCracken, 1988). According to several scholars (e.g., Peterson, 1979; Becker, 1974), culture production is a system formed by a network of specialists, who work together to create, manage and disseminate cultural symbols that can be obtained from consuming commodity signs. However, Hirschman (1986) views consumers also as a participant in this system who actively contribute to product symbolism. The author argues that when consumers associate intangible attributes to a product, which do not deviate from communications subsystem sources including advertisement agencies, public relations firms, traditional and consumer-oriented media, their personal interpretations of the product alter products' transmitted meanings. Former research on lay perceptions of health mostly falls into the first categorization, focusing on the meaning of health as created and proposed by specialists of the culture production system, while the investigation of the meaning of health from the consumer point of view is scarce. This research is the first to employ the way consumers communicate their idiosyncratic interpretations of health to other consumers, using digital media as a means to leverage their conceptualizations around commodified and communified aspects of health. In this context, it also contributes to the emerging theory of desire networks (Kozinets *et al.,* 2017), a technologically enhanced system in which the consumers' interaction with other actors lead to an increasing passion for consuming.

All in all, we offer some of the first evidence to suggest that consumers adopt a lay theory of health, which integrates consumption into social networks, and constructs accompanying meanings. This is an extension over Lawton's (2003, p. 35) argument that "illness do not affect individuals in isolation, but can impact upon whole social networks", highlighting the broader

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scope of networks, actors, and facilitators of relationships under an encompassing health umbrella, which does not necessarily involve mere experiences of illness. Moreover, our findings suggest that perception of disease, in fact, constitutes a separate domain of its own, as its respective associations are limited to only 1% of our data, possibly because other dynamics are at work in constructing and disseminating the meanings of illness. In this context, the findings of this study do not only contribute to the theory of consumption, but they can also be used to stimulate discussion to address new frontiers in medical sociology.

In this paper, we also offer a methodological contribution by integrating a novel use of social network analysis into consumption research, which proves to be a useful tool to identify key associations about a phenomenon, clustering, and classification patterns, as well as mapping relationships between them. Network analysis can be performed as an independent technique to explore the relationships between actors, narratives or events, or may be utilized to support a variety of other techniques well-known to consumer research. The use of social network analysis is only recently emerging in consumer studies (e.g., Arvidsson and Caliandro, 2015), yet, given the impact of social networking platforms in the evolution of consumption dynamics, it is apparent that this technique will be increasingly considered in relation to other available methods for examining semantic and structural relationships.

2. Managerial implications

This research not only contributes theoretically to the extant literature on lay beliefs of health-related behavior but also sheds light on the understanding of health in consumers' perspective. In this respect, since a majority of the consumers around the world are attempting to take charge of their health (Nielsen, 2015), our research, which provides the perceived four meanings of health from the consumers' perspective, is of considerable interest to policy makers, communicators,

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health-care institutions, health educators and medical professionals. By providing a deeper look into conceptualizations of well-being and associative networks around the value of health, this study enables health professionals and policy makers to formulate evidence-informed health policies. Also, discovering and making sense of the meanings of lay health beliefs help improve patient-professional relationship by avoiding the potential for dissatisfaction and misunderstanding due to different perspectives on treatment and care.

While most of the prior research focused on individuals with medical conditions and illness behavior (Lawton, 2003) this study investigates digital representations of what people understand by health, how they believe it can be achieved, and the actual practice of healthy manners in their daily lives. Since we demonstrate the actual documented health behavior of healthy lay people, we provide substantial insights that eliminate the discrepancies between beliefs and actual behavior.

To date, most sociological studies of lay health beliefs come to an agreement that lay meanings of health vary according to social context. This social context can act as a constraint for action to change an unhealthy lifestyle. Nevertheless, as Secretary of State for Health in UK (1999: 23) noted:

> "Past health strategies have tended to focus excessively on lifestyle issues. Paradoxically they have often failed to recognize how people can play a positive part in building healthy lives for themselves and in contributing to the health of other members of society. People were treated as passive recipients of information and services, rather than as active partners. This misperception contributed to the widening of the health gap."

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Therefore, current health promotion strategies ignore the people's active role in the management of their condition and assume that convincing people to adopt healthy lifestyle is about changing individual attitudes (MacInnes and Milburn, 1994; Blaxter, 1990) rather than focusing on the social norms, which is "the strength of others' opinions on the behavior and a person's own motivation to comply with those of significant others" (World Health Organization, 2012). In this research, by demonstrating how people are active recipients of information in disseminating experiences about their perceived healthy lifestyle on social media, which results in encouraging others to take an active role in their appropriate care, we provide a shift of focus in the health promotion strategy of the medical professionals, clinicians, remedy marketers and governments.

A recent study revealed that physicians started to use social media to interact with their patients online (Househ, 2013). Approximately 60% of physicians use social media with the aim of providing patient education, health monitoring, and for encouraging behavioral changes. Therefore, we believe that using the "Digital Consumptionscapes of Health" presented here, a comprehensive health promotion and a health education program on social media can be designed and communicated by physicians targeting individuals, families, social networks, organizations and the community as a whole, not only to change an unhealthy behavior but also to motivate to produce stable and lasting changes in health behavior.

Although social media offers an efficient platform to share health-related information, to promote healthy behavior and to interact with others, it also presents potential risks for lay public due to the distribution of inaccurate sources of insights and unreliable information. Additionally, the medical advice given may be specific to individual needs, unreferenced and informal and may cause serious health problems. A study conducted by Pew Research Center (2009) showed that 22% of respondents had followed their friends' personal health experiences or updates on

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social media. This statistic is noteworthy for health professionals. To avoid the risks that social media may cause by disseminating poor health information, physicians, nutritionists and trainers can work together. They can launch specific social media account to distribute credible information and offer customized plans about food, supplements, and physical activity to motivate and monitor behavioral changes for bodily well-being, support public's spiritual and psychological well-being, create better relationships and improve the quality of care delivered to the public.

3. Limitations and future research

Hughner and Kleine (2004) argued that people's health views are socio-cultural products; hence vary cross-culturally, suggesting that health worldviews should be explored within a particular culture. In this context, one limitation of our analysis is that it focuses on multiple socio-demographic groups from different parts of the world and explores the self-defined health perceptions of healthy lay people as they are reflected in the digital realm. Therefore, future research can address this lack of focus on a specific group of people at a given time and place by performing cross-cultural and cross-generational comparisons on the perceptions of health and related practices among healthy lay people. Relatively, another limitation of this work lies in its coverage of the Instagram hashtags as it ignores all non-Anglophone languages, which excludes people who do not use hashtags in English on their Instagram posts. It can be argued that this exclusivity assigned to the English language may potentially narrow down the focus group to only a specific mindset. Combined with the aforementioned argument from Hughner and Kleine (2004), it would be a good addition to perform a similar study for specific cultural groups in their own language.

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Our study focused on the posted Instagram image and its meaning to the user translated into one word in the form of a hashtag. To broaden the focus of this work and to include an exploration of the dissemination of these meanings to others, user captions, follower comments and the number of likes can be included in our proposed analysis methodology as additions to the hashtags. These extra reactions displayed by both the owner of the post and the followers will offer new streams of research. Furthermore, performing a similar study on other social media platforms than Instagram, such as micro-blogs (e.g. Twitter) and media-sharing sites (e.g. YouTube, Facebook), and combining the results with the four-quadrant model presented here would offer useful insights for both academicians and professionals. For instance, the health care and social media streams in Twitter tagged with specific hashtags, such as #hcsm (healthcare social media), #publichealth and #health, can be used to identify health-related articles and posts.

This research not only provides valuable insights on the health perceptions of healthy lay people, but also paves the way of new research channels that should focus on answering various useful follow up questions. Future research should focus on answering questions on the impacts of genetic inheritance, relationship with friends and family, job prospects, employment conditions, and access of health services on the construction of meanings of health.

As mentioned in the managerial implications section of this paper, the conclusions derived from this stream of research can be used to develop effective health-related communication strategies in business or governmental activities. Exploring whether the practice of health in daily life accords with the way that it is communicated in the digital world, however, is critical in evaluating the reliability of these strategies. Therefore, future research paths to evaluate the correlation between perception and practice have to be opened.

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As of May 4th, 2017, the number of posts using the #health and #illness hashtags on Instagram were 55,535,924 and 234,333, respectively. This huge dominance of one concept on the other is intriguing and future research may aim to understand the differences and similarities between the meaning of illness and health among lay people, their correlation and how the model proposed in this study aligns with the perceptions of illness.

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Figure 1: *NodeXL Network Visualization Graph*

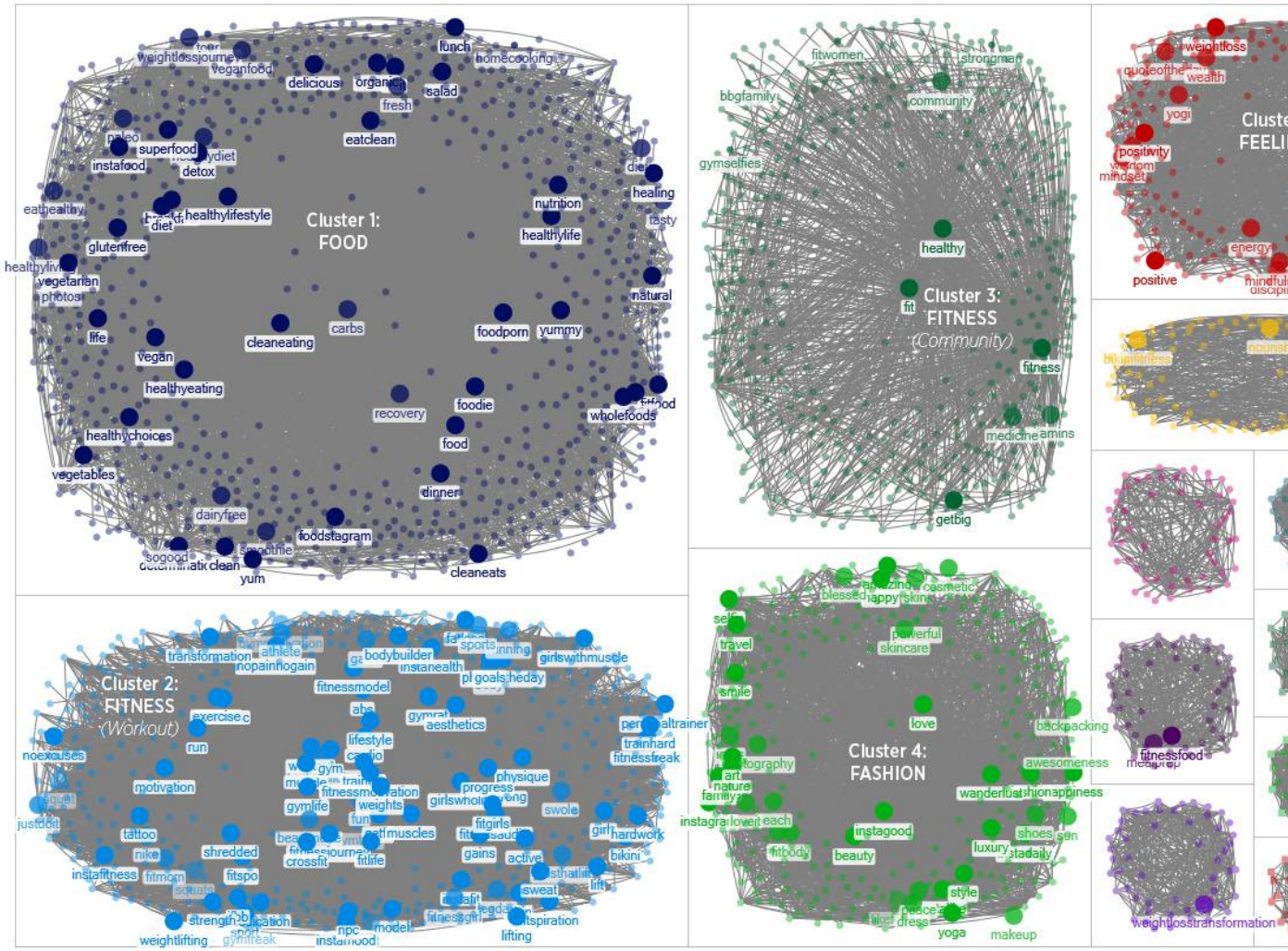

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Figure 2. *Digital Consumptionscapes of Health*

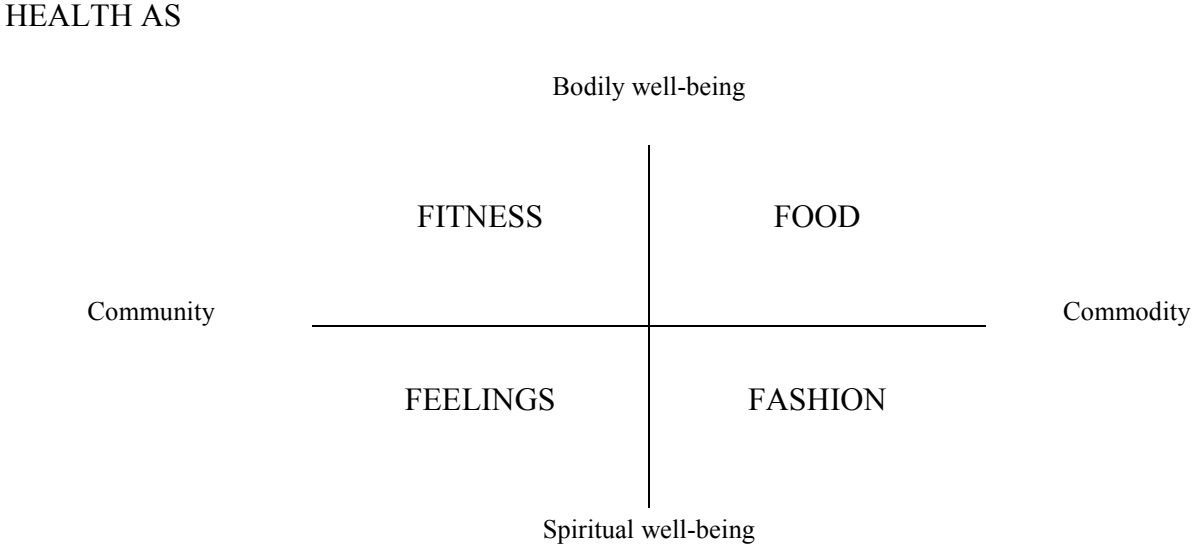

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Figure 3. A Collage of Pictures Extracted from Instagram as Representations of their Respective Quadrants

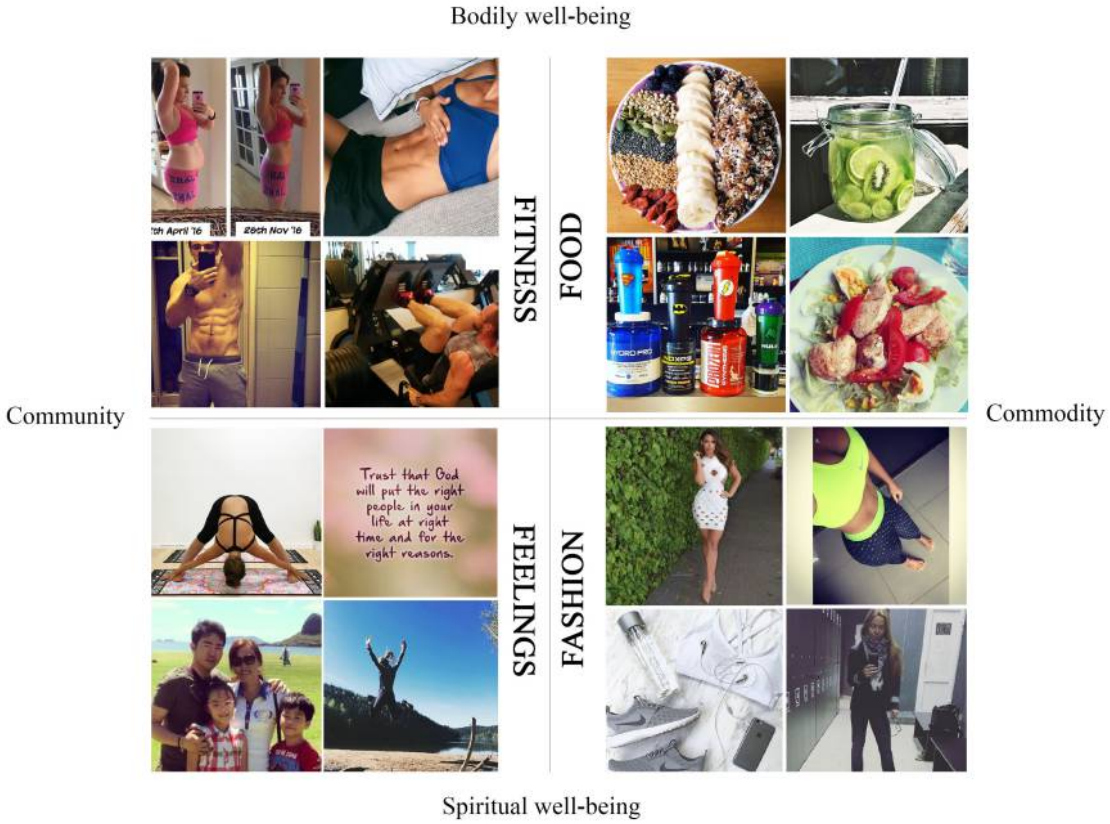

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Table 1. *Statistical distribution of visual analysis*

Category	Number of posts	%
Food	638	31.90
Fitness	467	23.35
Feelings	275	13.75
Friends and Family	137	6.85
Fashion	131	6.55
Fun	109	5.45
Beauty	41	2.05
Technology and wearables	31	1.55
Medical Health	22	1.10
Porn	48	2.40
Irrelevant	101	5.05
Total	**2,000**	**100.00**

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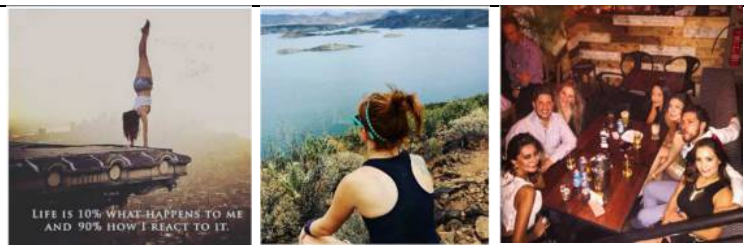
Table 2. Exemplary photos and hashtags of four main categories

Category	Exemplary hashtags	Exemplary Photos
Food	#food, #eatclean, #healthychoices, #diet, #nutrition	
Fitness	#fitness, #gym, #fit, #workout, #training, #bodybuilding, #getfit, #active, #weightloss, #body	
Fashion	#fashion, #beauty, #wellness, #gymclothes	
Feelings	#family, #love, #motivation, #peace, #lifestyle, #fun, #givingback, #yoga, #happy, #life	

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