

Tweeting in Times of Crisis: Shifting Personal Value Priorities
in Corporate Communications and Impact on Consumer Engagement

Mahdiyeh Amozegar

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Telfer School of Management
University of Ottawa

Abstract

Branding in the age of social media is thriving as companies continue to pour resources into digital campaigns in the hope of engaging their customers. The onset of the COVID-19 pandemic boosted the importance of digital communication channels as physical distancing and lockdown measures disrupted business-as-usual and limited in-person interactions between firms and their customers. By implication, the global crisis pressed companies to deliver brand messages via online content to sustain or build customer relationships. This research focuses first on the branded content of corporate communications during the pandemic, focusing specifically on whether firms used the opportunity to showcase shared personal values. Second, we examine whether using value words in social media messages impacts customer engagement with these messages.

To address these related questions, we collected Twitter data from Fortune 500 firms posted between January 2020 until the end of August 2020, attending to 56,770 firm-initiated tweets (we excluded firm responses to customer messages). The first study examines the personal values expressed in the messages using the Personal Values Dictionary, based on Shalom Schwartz's original ten-value typology. We argue that the unprompted expression of values in a text is a behavioural indicator of personal value priorities. The findings compare firms' shifting value priorities over time and association with key events, namely the global pandemic declaration (March 11, 2020) and ensuing lockdowns and George Floyd's murder (May 25, 2020), and BLM protests. We find that, indeed, companies did shift their value priorities. The second study assesses consumer response to the values companies put forth in their tweets, focusing on social media indicators of consumer engagement (CE), including the number of likes, retweets, replies, and CE correlation with the values promoted in the tweets. We observe a pre- post-crisis shift in CE with value-laden messages. Our findings provide managerial insights that can guide marketers to manage their social media content more efficiently and better align their marketing and branding efforts with customers' values in times of crisis.

Keywords: Consumer engagement, values, crisis, COVID-19, text analysis, Twitter

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Chapter 1. Introduction

Even in the best of times, modern marketing communications managers face challenges planning opportunities to communicate about the brand. Contact points to deliver messages are ubiquitous and diverse, including traditional advertising media, in-store displays, personal selling, sales promotions, direct marketing, and sponsorship – not to mention online channels and social media, which occupy an increasing share of communications budgets. In March 2020, the complexity and challenge of marketing communications planning went from bad to worse with the outbreak of a novel coronavirus, COVID-19.

In response to the global pandemic, governments implemented measures to foster physical distancing, require self-quarantining, impose store closures, instill travel bans, and implement lockdowns to mitigate the public health risk. The impact on business and consumers was immediate and profound, forcing companies to rethink their marketing and push them to find substitutes for traditional in-person and in-store communication channels. The crisis was also a catalyst for companies to revisit their digital marketing presence as almost overnight, working from home became a new routine, and consumers increased online spending and use of social media. In short, the pandemic triggered a need for companies to bolster their online presence to reach and connect with customers in this time of crisis.

Social media has become a powerful platform of communication that connects about four billion people or about half of the world's population. Given the dominance and reach of social media, most companies use these platforms to reach out to and engage with their customers. Social media presence facilitates conversation with people, promotes sharing ideas, connects users to the company, forges customer-brand relationships, and impacts sales performance (Colicev et al., 2018; Kietzmann et al., 2011). Brand-initiated conversations matter for various reasons, foremost providing the opportunity to affirm the brand's positioning and generating communication effects, including customer engagement (CE) that disperses the content widely through the audience's social networks (Jenkins, Ford, & Green 2013).

This study aims to investigate brand positioning and customer engagement with company-initiated messages during the pandemic. We focus on companies' emphasis on

personal values, defined as “self-relevant goals states” (Gengler & Reynolds 1995) or “desirable states of existence” (Parry 2001). Appeals to closely held personal values have a long history in marketing (Gutman 1982; Vinson, Scott, & Lamont 1977; Wedel & Kamakura 2012). For the customer-focused marketer, emphasizing specific sets of personal values can effectively achieve brand positioning and differentiation objectives (Padgett & Mulvey, 2007). Company-initiated messages convey personal values by conveying means-end benefit chains (Reynolds, Gengler, & Howard 1995; Reynolds & Olson 2001) or depicting target customers or evoking archetypal brand characters that align with consumers’ goals and self-concept (Mulvey & Medina 2003; Reynolds 1985; Padgett & Mulvey 2009). Central to both approaches: personal values influence the motivations that drive human behaviour. For instance, associations of a brand or desired product features with a consumer's personal values (or a segment's shared values) can increase product attractiveness (C. Lee & Kahle, 2016) and the perceived value of the offering and willingness-to-pay (Gengler & Mulvey 2017).

Accordingly, our study generates a large *in situ* Twitter dataset of 56,770 tweets from Fortune 500 company-initiated tweets from January to August 2020, drawing upon new dictionary-based text analysis methods (Berger et al., 2020; Boyd & Schwartz 2021) to examine whether companies shifted the value priorities in their messages. Our research goes beyond the simple question of whether the aggregate volume of tweets (or branded content) changed in response to the pandemic to analyze the value-expressiveness of the texts using the recently validated Personal Values Dictionary (PVD) (Ponizovskiy et al., 2020) and Schwartz’s (1992) theory-grounded typology of 10 basic human values.

Abaido and Takshe (2020) reported stock market volatility, tourism disruption, and a rise in online conspiracy theories in the months following the outbreak in Wuhan, China. Similarly, COVID-19’s impact was felt in supply chains (Sharma, Adhikary, & Borah 2020), retailing (Pantano et al., 2020), and the education sectors (Krishnamurthy 2020). Thus, we examine the relative frequencies of references to specific values using the PVD values scores, enabling a month-by-month comparison mapped onto macro events such as the World Health Organization’s (WHO) declaration of the global pandemic on March 13, 2021, and George Floyd’s murder on May 25, 2020.

Accordingly, the first study attempts to address the following question:

RQ1: Do firms change the value priorities conveyed in company-initiated tweets in response to pandemic-era events?

In the second study, we investigate whether levels of consumer engagement (CE) with the company-initiated tweets changed during the health crisis. CE is a key metric of success in companies' social media initiatives, as they strive to encourage consumers to like, comment, and share posts, pay attention and absorb the message, or generate enthusiasm or enjoyment (Dessart, Veloutsou, & Morgan-Thomas 2015). Following the lead of other studies (C. Lee & Kahle 2016; D. Lee, Hosanagar, & Nair 2018), we rely on behavioral indicators (likes, comments, and sharing) to measure CE. Holt (2016) reports that most brands struggle to generate significant interest online despite huge investments in brand building in social media. However, brands can acquire cultural meanings via ideologies and worldviews that evoke shared beliefs and values (Fournier & Alvarez 2019; Holt (2004). Could the pandemic provide a context for companies to target emerging ideologies and connect with customers through brand values? Our research examines whether companies advanced specific personal values while de-emphasizing others. Accordingly, the second study attempts to address the following question:

RQ2: Are the value priorities conveyed in company-initiated tweets predictive of customer engagement, accounting for pandemic-era events?

The remainder of the thesis is organized as follows. Chapter 2 describes the core concepts of personal values and customer engagement, offers definitions, traces conceptual roots, accounts for variation in approaches, and examines measurement methods focusing on best practices for operationalizing the concepts. Chapter 3 details the design of our two empirical studies and reports study findings. Lastly, Chapter 4 elaborates on our conclusions, reports study limitations, and describes opportunities for future research.

Chapter 2. Theoretical Foundation

This chapter aims to investigate the core concepts of this study: personal values and customer engagement. First, we examine how values are studied at the different levels of analysis and discuss the relevance of personal values in marketing. Next, we review measurement approaches that provide our rationale for choosing Schwartz values over others described in the literature. Then, we elaborate on the concept of customer engagement, reviewing definitions and distinguishing various types. Finally, we discuss the importance of CE in marketing and explain our decision to use behavioural indicators of CE.

2.1. Values

Values are a core concept in this study as we attempted to investigate the change in firm-generated content regarding consumer values in a time of crisis. This study also attempts to investigate how CE with consumer values changed throughout the current health crisis. For this purpose, we verified the changes in CE with the values that companies have addressed in their tweets.

Throughout history, scholars have believed that our words carry subtle psychological clues about us. Scholars are taking increasingly complex and nuanced approaches to psychological language analysis (Boyd & Schwartz, 2021). Recent attempts to estimate psychological constructs – such as values – from natural language have yielded promising results. Notably, researchers have found that Twitter data is a reliable source to verify consumers' values. Such an outcome is related to the volume and accessibility of textual data that have allowed working with previously inaccessible populations and research questions. Such data also avoids many known problems associated with self-reports, including response biases, experimenter effects, and participant fatigue (Ponizovskiy et al., 2020). The following section is devoted to values – one of the key concepts in this study.

2.1.1. Personal Values in Marketing and Consumer Behavior

Personal values have important implications for marketing practitioners and researchers

as values influence consumers' behavior as they look at and choose brands, product classes, and product attributes. Various value sets significantly differentiate men from women, hippies from non-hippies, hawks from doves, promising students from poor students, and Democrats versus Republicans. It follows that values are responsible for selecting and maintaining the ends or goals toward which human beings strive. They also regulate the methods and manner in which this striving takes place (Vinson, Scott, & Lamont 1977). Consequently, marketers integrate consumer values into their content to enhance the appeal of product offerings while addressing important goals that inform consumer decision-making (Padgett & Mulvey 2007; Ratneshwar, Mick, & Huffman 2003).

Knowledge of consumer value orientations provides insight into consumers' needs, expanding the marketers' knowledge beyond demographic and psychographic differences. If large market segments can be recognized based on value profiles, the marketing strategies could develop programs that would maximize the consumers' prioritized values in each market segment (Vinson, Scott, & Lamont 1977). Marketers use the top-ranked value to assign their consumers to segments (Kamakura & Novak 1992). Thus, values can be considered a standard consideration in market analysis and a tool to achieve greater precision and effectiveness in market segmentation. The assessment of value orientation and emerging value trends also facilitates identifying new product opportunities and repositioning existing products/services. A change in the importance of a target population's values may signal the need for products with brand names, colors, and designs, enhancing such important values in their use and consumption (Vinson, Scott, & Lamont 1977).

Also, marketers may benefit from their audience's values assessment to tailor their promotional strategies. The promotional messages for a product or service could be designed to refer to the desirable attributes of the product/service and communicate such values associated with the product/service attributes (Gengler & Reynolds, 1995). Value orientation recognition also allows more insightful media selection for advertisement. For example, as *Vogue Magazine* might be associated with self-enhancement values, firms that intend to promote products/services associated with self-enhancement values might find it a proper medium to reach their promotional messages to their target audience. This audience also practices self-enhancement values. Values research also has important implications for public policy and society (Gengler,

Mulvey & Oglethorpe, 1999). By monitoring changes in consumers' values and mood, firms can detect and rectify the unfavorable ethical aspects of their marketing program before receiving adverse consumer reactions. Also, value assessments can help firms plan corporate image and corrective advertising (Vinson, Scott, & Lamont 1977).

In addition to marketers, researchers have attempted to identify the values, which render individuals' value systems as a whole. A content analysis research by Mulvey and Stern (2004) on advertising themes taken by marketing literature from 1977 to 2000 shows consumer values as one of the themes that scholars have explored in their articles. In this period, 30 articles are reported to have depicted cultural values. This content analysis illustrates that such value-related themes, along with the other themes categorized as images and appeal types, stem from societal changes in the 1960s and early 1970s. These changes are associated with the emergence of civil rights, women's rights, and the consumer rights movement. Also, the expectation of the continuity of such changes motivated scholars to explore them.

2.1.2. Values, Value Priorities, and Value Systems

Rokeach (1973) offers one of the most highly regarded theories to explain patterns of human values and the role of such values in predicting individuals' behavior. He defined the value concept as "an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence" (Rokeach 1973, 5). Furthermore, Rokeach (1973) argues that the total number of values of primary interest to people is relatively limited. As a result, human values are arranged into a value system. A value system is "an organized set of preferential standards that are used in making selections of objects and actions, resolving conflicts, invoking social sanctions, and coping with needs or claims for social and psychological defenses of choices made or proposed" (Rokeach 2008, 20). The organization of values into a system based on relative importance is essential to some advantages. First, it leads us to take particular positions on social issues (i.e., people who reflect similar views on specific social issues, to a large extent, share similar value systems). Secondly, a distinctive value system predisposes us to favor one particular political philosophy and one type of voting preference. Finally, our value orientations dictate our actions

when choosing between alternatives, engaged in conflicts, and making important decisions involving our judgments (Rokeach 1973).

Moreover, scholars have frequently pointed out the relative stability of human values across time, cultures, and geographies (Schwartz 2012; Rokeach 1973; Kahle, Beatty, & Homer 1986; Padgett & Mulvey 2007). On the other hand, the literature has acknowledged the change in human values, depending on the temporal and environmental conditions (Rokeach & Ball-Rokeach 1989; Sortheix et al., 2019; Mulvey & Stern 2004). The argument of values stability has some roots in developmental theories. Schwartz (2012) argues that as individuals have always strived for being, they developed some values to protect themselves from potential threats at the unconscious level. Also, some values have evolved, focusing on guaranteeing the survival of individuals' communities rather than that of individuals. Indeed, having considered the fact that one's survival also depends on others in one's community, individuals developed community-focused values to protect their community members and, in turn, to protect themselves. Individuals foresee threats associated with ignoring those out of their community and indirect hazards to themselves and their community members. For instance, consider the value of nature protection. People understand that the reckless consumption of nature or failure to protect it might endanger the resources on which their own lives and others' lives depend.

An individual's value system is the cognitive representation of that individual reflecting his/her traits, societal and institutional demands. Rokeach (1973) also argues that human value systems can be divided into two fundamental types: terminal values and instrumental values. Instrumental values are associated with personality traits, whereas terminal values are close to life goals (Padgett & Mulvey 2007). Other human value systems are found in the literature and methods to measure values (Kahle, Beatty, & Homer 1986; Schwartz 2012). In marketing, most scholars have adopted one of the four approaches to measuring values: Rokeach's Value Survey (RSV) (1973), Mitchell's Values and Life Styles (VALS) (1981), Kahle's List of Values (LOV) (1986), and Schwartz's Value Scale (SVS) (2012). These approaches have shown that "an individual's values influence his or her beliefs, attitudes, behavior, and preferences in a wide variety of context" (J. A. Lee, Soutar, & Louviere, 2007, 1044). A similarity in the developed value measuring instruments is that they all use some forms of either rating scale or ranking to obtain the needed data. Whereas rating scales were a popular method in most early value-related research, the preferred ranking method aligns better with theoretical assumptions about value

priorities and tradeoffs with the value system (J. A. Lee, Soutar, & Louviere 2007; McCarty & Shrum 2000).

2.1.3. Values in Times of Crisis

Although we discussed that values are stable motivations, the priority individuals assign to their values might change under different circumstances throughout their life course. To be more precise, despite the relative stability of human values, individuals' values may shift in response to changing economic, technological, regulatory, cultural, or health-driven circumstances (Mulvey & Stern 2004; Padgett & Mulvey, 2007). Researchers assert that individuals tend to become more materialistic once unfavorable life conditions prevail, develop more respect for authority, and yearn for security. However, favorable life conditions are conducive to self-expression (Sortheix et al., 2019). Sortheix et al. (2019) showed changes in European young individuals' values following a financial crisis. Austin (2016) also investigated the effects of an economic crisis on peoples' lives regarding individuals' values. Moreover, Rokeach and Ball-Rokeach (Rokeach & Ball-Rokeach, 1989) found some dramatic changes in American value priorities from 1968 to 1981. Another study argues that instilling European values will result in seamless refugee, immigrant integration, and social cohesion (Gozdziak, Main, & Suter 2020).

Although changes in individuals' values need a substantial time to occur, such value changes are predictable. For instance, risk perception gives rise to self-protection values such as security (Sortheix et al., 2019). Austin (2016) found a boost in the importance of security and conformity values following the 2008 financial crisis in the UK. On the other hand, under risk perception, the importance of growth values such as self-direction is expected to diminish (Sortheix et al., 2019). Likewise, threat-driven value change might emerge at the time of a health crisis. In this study, we investigated the change in CE with individuals' values following the health crisis of COVID-19. This crisis's consequences have brought enormous pressure to the economy, humanity, and its environment.

2.1.4. Schwartz's Model of Values

This study has adopted Schwartz's basic values to investigate how CE with value-based messages changed following the COVID-19 crisis. There are some reasons which inform this preference. First of all, we found that they are still widely used and well-validated in various studies. For example, Sortheix et al. (2019) have verified the change in European young individuals' values during the global financial crisis that started in 2008. Their study tested Schwartz's theory and showed how the importance of these values changes according to the predicted circular structure in their context. Besides, Austin (2016) has verified some aspects of Schwartz's values during the same financial crisis. Also, researchers have used Schwartz values to predict outcomes, such as attitudes toward immigration (Davidov et al., 2008) and voting behavior (Sortheix & Schwartz, 2017).

Another reason for adopting Schwartz's values relates to the recent advances in measuring personal values using automated text analysis. Linguistic Inquiry and Word Count (LIWC) is a powerful tool that allows researchers to recognize and measure consumer value words mentioned in texts such as Twitter data (Brown, Caruana, Mulvey & Pitt, 2021; Pennebaker, Mehl, & Niederhoffer 2003; Pennebaker & Chung 2007; Pennebaker & Graybeal 2001). Increasingly, consumer researchers study values using LIWC approaches, such as Lee and Kahle's (2016) investigation of how sports companies use consumer values to convey information about their brands. Similarly, Chen et al. (2014) used LIWC to study the personal values in social media word use based on Reddit postings. Kumar et al. (2018) developed a dictionary to measure Schwartz values – used in our exploratory research before discovering Ponizovskiy et al.'s (2020) Personal Values Dictionary, which we will discuss shortly.

Schwartz and Bilsky (1987) introduced value theory, emphasizing a value system based on six main features. First, they asserted that *values are beliefs* that are associated with affect. Once values are activated, they become infused with feeling. For instance, when independence is an individual's important value, he/she experiences negative emotions if his/her independence is threatened. However, when he/she can practice his/her independence, happiness prevails. Secondly, Schwartz argues that *values refer to desirable goals* that aspire actions. Thirdly, *values transcend objects and specific situations* (Schwartz, 2012). Fourth, *values serve as standards or criteria* that guide the selection and evaluation of actions and people. Fifth, *values are ordered in*

importance relative to one another. Finally, *the relative importance of multiple values guides action*. Schwartz identifies ten universal values, described in

Table 1.

Table 1: Schwartz values and their definitions

Value Name	Value Definition
Self-direction	Self-direction has its roots in organismic needs for control and mastery. Also, it is associated with interactional requirements of autonomy and independence. The goal of this value is independent thought and action through choosing, creating, and exploring (Schwartz, 2012).
Stimulation	Simulation stems from “the organismic need for a variety and simulation to maintain an optimal, positive, rather than threatening, level of activation.” This need probably pertains to the need underlying the value of self-direction. So, excitement, novelty, and challenge in life are stimulation goals (Schwartz, 2012).
Hedonism	Hedonism is driven by organismic needs and the pleasure associated with satisfying them. The goal linked to this value is “pleasure or sensuous gratification for oneself.” The other value identified by Schwartz is achievement. Competent performance is a requirement for individuals’ or groups’ survival (Schwartz, 2012).
Achievement	Achievement value manifests competence in terms of prevailing cultural standards. Therefore, once such competence exists, social approval obtains. The goal linked to achievement is personal success through presenting competence according to social standards (Schwartz, 2012).
Power	Social institutions require some degree of status differentiation for functioning. To justify this fact of social life and motivate individuals to accept it, groups need to treat power as a value. In contrast, individuals tend to acquire dominance and control. Also, power is distinct from achievement. While the value achievement focuses on the “active demonstration of successful performance in concrete interaction, the value of power focuses on the “attainment of preservation of a domain position within the more general social system.” The goal attributed to the power value is social status, prestige, and control or dominance over people and resources (Schwartz, 2012).
Security	Security value applies to both individual and societal levels. In particular, the value of security focuses on security for self or those with whom one identifies. The goal of security is defined as safety, harmony, and stability of society, society, and oneself (Schwartz, 2012).
Conformity	Individuals have realized the necessity of inhibitors to prevent or limit the inclinations that might disrupt and undermine smooth interaction and group functioning. So, to address such a need, Schwartz suggested the value of conformity, which emphasizes self-restraint in everyday interaction with others. The goal associated with conformity is restraint of actions, inclinations, and impulses that may upset or harm others and violate social norms (Schwartz, 2012).
Tradition	Groups tend to develop practices, symbols, ideas, and beliefs to share their experience and fate. These are endorsed as valued group customs and traditions. Tradition and conformity share the goal of subordinating the self to social expectations; they are motivationally close, although there are some nuances. Conformity deals with subordination to persons with whom one often interacts (parents, teachers, and bosses). On the other hand, traditions focus on subordination to more abstract objects (religion and culture). It follows that conformity promotes responsiveness to current and potentially changing expectations.

Value Name	Value Definition
	In contrast, tradition addresses responsiveness to immutable expectations from the past. The related goal is to respect, commit to, and accept the customs and ideas that one's culture or religion practices (Schwartz, 2012).
Benevolence	Benevolence value emphasizes voluntary concern for others' welfare. Benevolence and conformity are similar in promoting cooperative and supportive social relations. While benevolence provides an internalized motivational base for such behavior, conformity relates to cooperation to avoid adverse outcomes for oneself. The same helpful act can be driven from each of the two values. The involved goal is to preserve and enhance individuals' welfare in personal contact frequently (Schwartz, 2012).
Universalism	Like that of many other mentioned values, the root of the value of universalism is in individuals' and groups' survival needs. However, an individual barely recognizes these needs unless they face others beyond the circle of his/her primary group members, and he/she becomes aware of the scarcity of natural resources. It follows that the individual may realize that the failure of accepting outgroup others and justly treating them is likely to result in deleterious strife. In terms of recourse scarcity, individuals decipher that the failure of natural resource protection eventuates the destruction of the resources they rely on for survival. Therefore, it is consequential to conclude that universalism addresses two subtypes of concern: the welfare of those in the larger society and the protection of natural resources (Schwartz, 2012).

Furthermore, Schwartz (2012) offered a theoretical model of values (see **Figure 1**).

Values that hold an adjacent location in Schwartz's theoretical model of values are conceptually and functionally similar and are more likely to be pursued together. On the other hand, values that express conflicting motivational goals are oppositionally situated and are less likely to be pursued together. Schwartz identified two motivational conflicts defining the higher-order dimensions of conservation versus openness to change and self-transcendence versus self-enhancement. Conservation values (security, conformity, and tradition) express the need for control, order, and protection. Openness to change values (self-direction, stimulation, and hedonism) reflect the need for exploration, novelty, and new opportunities. Self-transcendence values (benevolence and universalism) focus on the outcome of one's actions for others, while self-enhancement values focus on oneself (Ponizovskiy et al., 2020).

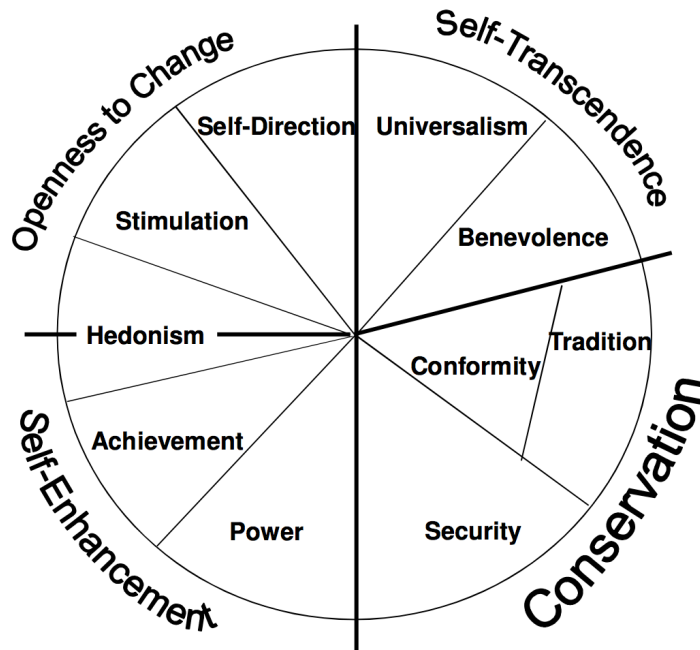


Figure 1. Theoretical Model of Relations Among Ten Motivational Type of Values
reprinted from Schwartz (2012)

2.1.5. Personal Values Dictionary

In addition to manual content analysis, computer-driven text analysis has been utilized in various forms to quantify big data of a qualitative nature. Dictionary-based approaches (e.g., LIWC) to text-analysis are among the most popular approaches due to their transparency and simplicity (Guo et al., 2016; Pennebaker & Graybeal, 2001). The latent Dirichlet allocation (LDA) is another text analysis technique that was initially developed by Blei et al. (2003) as a natural language processing (NLP) technique with the goal of "find[ing] short descriptions of the members of a collection that enable efficient processing of large collections" (Hannigan et al., 2019). To date, LDA has emerged as the most popular topic modeling technique across various disciplines, including management scholarship (Bao & Datta 2014; Hannigan et al., 2019; Guo et al., 2016). Other than dictionary-based approaches, other techniques such as word embedding

have also been introduced, bypassing the requirement of a dictionary (Mikolov et al., 2013).

Our study generates a large *in situ* Twitter dataset of 56,770 tweets from Fortune 500 company-initiated tweets from January to August 2020, drawing upon new dictionary-based text analysis methods (Berger et al., 2020; Boyd & Schwartz 2021) to examine whether companies shifted the value priorities in their messages. Our research goes beyond the simple question of whether the aggregate volume of tweets (or branded content) changed in response to the pandemic to analyze the value-expressiveness of the texts using the recently validated Personal Values Dictionary (PVD) (Ponizovskiy et al., 2020), Schwartz's (1992) theory-grounded typology of 10 basic human values, and LIWC.

The reasons for choosing Twitter over other social media platforms follow. First, Twitter is a popular platform for corporate communications compared to other social media platforms (Han & Cho, 2013). Second, Twitter is a text-centered platform, compared to other platforms such as Instagram and YouTube, in which photos and videos play a dominant role. Third, Twitter has been driving the phenomenon of micro-blogging that allows for capturing users' revealed behavior. Moreover, Twitter helps make collective sense of messages as it allows for short, speedy, and numerous conversations. In addition, it provides rich material that is analyzable by text analysis tools (Kietzmann et al., 2011). Finally, Twitter's open attitude towards researchers using its content by scraping its data through its API is advantageous versus closed platforms, such as Facebook (Facebook, 2021).

This study focuses on tweets by Fortune 500 companies. A significant advantage is that this set of companies are often the object of other research, generating relatively available and accessible data. These data (e.g., the social responsibility ratings) may provide the necessary information in our following future research, as discussed in Chapter 4.

2.2. Engagement

This study considers engagement in an individual's behavioral reaction – sharing, liking, and commenting on social media content. In particular, this study aims to investigate whether consumer engagement with personal values portrayed in firms-initiated tweets changed during the pandemic. Consequently, on a specific platform, Twitter, we measured engagement based on the number of likes, retweets, and replies. For clarification on the concept of CE, this section reviews descriptions found in the literature. The following section elaborates on some other types of engagement popular in the literature. In addition, it expounds on online engagement and engagement in the context of social media and illustrates the importance of CE for firms and how firms may achieve CE.

2.2.1. Engagement in Literature

Various disciplines use the term "engagement," including psychology, sociology, political science, and organizational behavior. Since 2005, there has been an expansion of engagement-related terms in marketing, such as *brand engagement* and *customer engagement* (Brodie et al., 2011).

Researchers have tried to understand the concept of CE as firms aim to engage consumers better (Vivek et al., 2014). Marketing managers regard CE as a strategic imperative that positively impacts corporate performance, such as sales growth, superior competitive advantage, and profitability. Brodie et al. (2011) argue that engaged consumers, being involved in viral marketing activity, provide referrals and recommendations for specific products/services and brands to others in their network. Furthermore, engaged customers can actively participate in new product/service development and co-create experience and value in various ways.

Firms attend to the level of consumers' (or prospective consumers') interactions and connections with the brand and firm's activities, which also often include brand activities in social networks and media. Scholars have attempted to define CE as something much broader in scope than purchasing. For instance, Vivek, Beatty, and Morgan (2012, 127) assert that CE is "the intensity of an individual's participation in and connection with an organization's offerings and/or organizational activities, which either the customer or the organization initiate." Brodie et al. (2011, 8) assert that CE is a "psychological state that occurs by virtue of interactive, co-creative customer experiences with a focal agent/object (e.g., a brand) in focal service relationships."

Lacking consensus on the concept of CE, scholars have proposed other terminologies (Vivek et al., 2014). For instance, Van Doorn et al. (2010, 2) suggested *consumer engagement behaviors* as "consumers behavioral manifestations that have a brand-focus or firm focus, beyond purchase, resulting from motivational drivers." Similarly, Sashi (2012, 267) asserts the the "*consumer engagement process* embodies interactive consumer experiences where ICTs such as social media act as tools that can enable and facilitate these experiences. The *level of consumer engagement* is a calculative and affective commitment to an active relationship with a firm or the firm's online community." Likewise, Hollebeek (2011, 790) defines *customer-brand engagement* as "the level of consumer's motivational, brand-related and context-dependent state of mind characterized by specific levels of cognitive, emotional, and behavioral activity in brand interactions. It includes the themes of immersion, passion, and activation."

Although, as mentioned above, researchers have utilized different terminologies to refer to the concept of CE, there are some commonalities across the researchers' definitions. One of these commonalities is that CE includes experiences, interactions, and connections between the

subject (customer) and the object(s) (brands, websites, activities, and other customers). Secondly, CE is primarily motivational, although many researchers have focused on CE's behavioral manifestations. Also, pointing out that engaged consumers interact with the brand without necessarily making a purchase or even planning to make a purchase, scholars agree that CE is a concept beyond the purchase. On the other hand, there are some disagreements recording CE among researchers as well. First of all, while most scholars attribute positive effects such as greater loyalty, trust, and commitment to engagement, others accentuate that engagement by definition does not need to be positive. Indeed, they argue that a consumer can be negatively engaged with a company or brand (Vivek et al., 2014).

Moreover, researchers have not achieved any consensus on whether CE is a unidimensional or multidimensional construct. For instance, Hollebeek et al. (2014) argue that the relevance of CE dimensions depends on the context. In other words, CE may obtain different dimensions in online, brand, organizational perspectives. Hollebeek et al. (2014) consider three dimensions of immersion (engrossed in), passion (love or adoration), and activation (willingness to spend time and interacting with the brand) for CE. Also, some researchers suggest an experiential dimension and a social dimension for CE. The experiential dimension pertains to "the hedonic elements relative to usage and interaction with the brand."

On the other hand, the social dimension includes social exchanges with peers and relates to "interaction, co-creation, sharing brand-related values and contents" (Vivek et al., 2014). Additionally, scholars have examined CE in three theoretical frameworks, including behavioral, cognitive, and emotional frameworks (Sinatra, Heddy, & Lombardi, 2015). Following the lead of scholars including Barger et al. (2016) and D. Lee et al. (2018), we adopt a behavioral approach to CE and use the number of likes, replies, and retweets as a proxy for engagement.

2.2.2. Types of Engagement

Measurement of CE is not solely focused on levels of engagement but also attends to the various types of domains of engagement, including student engagement, civic engagement, political engagement, workplace engagement, church engagement, and online engagement.

Civic engagement: Civic engagement conventionally refers to activities by ordinary citizens to influence society for others outside the own family and circle of close friends. More recent studies have attempted to define the concept more specifically, referring to individual and collective actions. It follows that individuals engage in society in many different ways, such as discussing politics, following political issues, writing to editors, donating money, and recycling for environmental reasons. Moreover, people can either voluntarily take such actions or organize to solve local problems or improve society's conditions. A framework by Ekman and Amna in Appendix D classifies civic engagement types and their indicators (Ekman & Amnå, 2012).

Some studies have equalized civic engagement with *political engagement*, stressing the political aspects of civic engagement. However, other scholars have conceptualized political engagement as one way civic engagement manifests itself (Ekman & Amnå, 2012). Also, literature has explored the relationship between civic engagement and political engagement with church engagement. Church engagement encompasses participation in churches, synagogues, and similar institutions or involvement in such institutions' activities. Some scholars categorize *church engagement* as a form of civic engagement, for involvement in religious organizations is "the overwhelmingly most common" among the forms of civic engagement (Hill & Matsubayashi, 2008).

Student engagement: Student engagement, conceptualized as a multidimensional construct with behavioral, emotional, and cognitive dimensions, is also studied by researchers.

The behavioral aspect focuses on actions such as attendance and participation in school activities. The emotional dimension emphasizes a sense of belonging or valuing of the school. Cognitive engagement is a willingness to engage in challenging tasks, purposiveness, strategy use, and self-regulation. Agentic engagement is considered an aspect of student engagement by some scholars, meaning that students may constructively contribute to instruction flow. Behavioral student engagement measures include displays of effort, persistence, and behavioral aspects of attention, such as eye contact during discussions. Self-directed academic behavior, such as exhibiting perseverance in adversity and autonomous information seeking, is also employed to measure the behavioral engagement of student engagement (Sinatra, Heddy, & Lombardi, 2015).

Emotional student engagement, defined as students' reactions to academic subjects such as science or school, includes positive and negative emotions. While positive emotions are likely to be positively associated with emotional engagement and achievement, negative emotions are likely to play an antagonistic role in a students' emotional engagement and achievement. Cognitive engagement is associated with a psychological investment, meaning that once students face challenging tasks, they become psychologically invested and expend their cognitive effort to tackle the problem. Furthermore, self-report, observation, and teacher ratings individually and collectively measure the extent to which a student is engaged, measured along person-oriented and context-oriented continuums. A framework suggested by Sinatra et al. (2015) is shown in Appendix D, describing the engagement continuum.

Workplace engagement: Workplace engagement, in the view of employers, concludes components such as commitment, work ethics, loyalty, and satisfaction. The firm's workplace engagement model includes employee's contribution to the company, the personal satisfaction

the individual derives, and the alignment of the two. On the other hand, academic studies define workplace engagement as harnessing the self to one's role at work, expressed physically, cognitively, and emotionally. High engagement enhances employee loyalty. The literature reports the benefits of employee loyalty and advocacy on the firm's behalf. Also, aligning an organization's values with employees' values is conducive to workplace engagement (Schullery, 2013).

Online engagement: There have been challenges to measuring online engagement, depending on the media type. Such difficulties stem from difficulties associated with defining engagement (Wu, Rizoïu, & Xie, 2018). Those engaged with a media such as a television program or website develop a particular connection with it and, thus, probably view or visit it frequently. However, it is hard to define the concept of engagement beyond "loose descriptions," such as feeling connected and frequently using it (Calder, Malthouse, & Schaedel 2009, 322). Mersey (2010) defines engagement as the collective experiences that readers or viewers have with media brands. Consequently, measures of engagement specify the extent to which an individual's experience – defined as a set of beliefs that a person has about a media brand – fits into his or her life. For this purpose, like Hollebeek et al. (2014), they measure consumer brand engagement on social media platforms using qualitative methods and surveys.

Companies like YouTube use more detailed indicators of online engagement. For instance, they measure the popularity of online videos using the willingness to click on a video. However, engagement with online videos is not well understood, and the literature is evolving quickly. Most literature focuses on the perspective of an individual user, such as recommending relevant products, tracking mouse gestures, and optimizing search results to measure engagement (Wu, Rizoïu, & Xie, 2018). The technologies of rating systems also help measure engagement

(Jenkins, Ford, & Green, 2013). D. Lee et al. (2018) measured Facebook user engagement based on the number of likes, comments, shares, and click-throughs.

Also, a fundamental question makes social media engagement different from engagement with traditional media such as television programs. The spreadability of social media has allowed its audience to circulate its content or its content easily. As a result, unlike the audience of traditional media that was dominantly the receiver of the media content, the audience of social media plays the role of content circulating. Such desire for circulation, in turn, is fed by the prevailing participatory culture, which views the public beyond simple consumers of the company-generated content. In such a culture, people shape, share, reframe and remix media content.

Consequently, individuals have become capable of social interactions with other fans in the community, differentiating themselves from mere spectators. Besides, the forgoing social media's unique feature allows its audience to stress their presence. On the other hand, by paying attention to the user-generated content, firms are more informed of the commercial need of their audience that used to be invisible to them (Jenkins, Ford, & Green, 2013). Likewise, in this study, we consider engagement as an individual's behavioral reaction-sharing, liking, and commenting on social media content. In our study, on the platform of Twitter, we measured engagement based on the number of likes, retweets, and replies. **Table 2** summarizes engagement types, along with theoretical frameworks and measurement approaches.

Table 2: Engagement Types, Theoretical Frameworks, and Measurement Approaches

Engagement Types	Cognitive	Affective/Emotional	Behavioral
Student Engagement	Willingness to engage in challenging tasks	Sense of belongingness Valuing of school	Class attendance Participation in school

Civic Engagement	Self-regulation		activities
	Attentiveness to societal issues	Sense of belongingness to a group	Community volunteer work
Political Engagement	Personal interest in societal issues		
	Attentiveness to political issues	Sense of belongingness to a political profile or agenda	Political party membership Electoral participation
Environmental Engagement	Personal interest in political issues		
	Personal interest in protecting environment from environmental pollution	Valuing nature Feeling worried about global warming	Protesting for global warming Recycling
Workplace Engagement	Interest in a workplace	Sense of belongingness to a workplace	Participation in after-hours activities with colleagues
Consumer Engagement	Interest in a brand	Feeling involved in a brand community	Brand repeat purchase Brand referrals
	Brand loyalty	Brand affect	
Online Engagement	Willingness to participate in an online discussion	Feeling ties with an online community	Website visit frequency Online sharing
Popular Measurement Approach	Experiments	Experiments	Observation
	Interviews	Secondary data	Secondary Data
	Surveys		Surveys
	Secondary Data		Interviews

2.2.3. Consumer Engagement: Why it Matters and What Informs it?

To elaborate on the importance of CE and how to achieve it, researchers have proposed conceptual frameworks for it, enumerating the antecedents and the consequences of CE for firms. For example, Vivek et al. (2012) have put forward a variance model as their CE's conceptual framework, shown in Figure 17, discussing the potential benefits of CE for the firm and the other concepts that may affect CE. First, they propose that the intensity of an individual's focus of engagement positively affects his/her level of participation. They define consumer

participation as "the degree to which the consumer is involved in producing or delivering the service." They also point out that customer participation engages him/her in an "interactive situation that is of common to the firm and the customer." This interaction can lead to higher enthusiasm and, in turn, greater engagement with the entity. The intensity of an individual's focus of engagement also positively affects his/her level of involvement. For example, Sephora and Clinique organize free beauty workshops and provide anyone walking in with the opportunity of risk-free interaction. Doing so enhances these companies' relevance in consumers' minds and, in turn, may lead to more engaged future customers. Vivek et al. (2012) also postulate that a highly engaged individual will derive intrinsic and extrinsic value from his/her focus of engagement. When the consumer "appreciates an engagement initiative for its own sake," he/she renders intrinsic value from it. If an initiative also enables the consumer to function better, he/she derives extrinsic value.

Furthermore, Vivek et al. (2012) propose that an increase in the consumer's value perception positively affects his/her participation and involvement with the focus of engagement. They suggest this proposition based on the reciprocal action theory. The theory suggests that in a relationship that involves two parties, one party tends to reciprocate actions taken by another party. The reason is that each party perceives itself as guilty or perceives the other party guilty is due to violations of the norm of reciprocity. As a result, individuals tend to "return good with good" in proportion to what they receive. In other words, the more value from an offering or activity the customer perceives, the more the customer involves himself/herself in a feedback loop. Also, the study suggests that CE is positively associated with a consumer's trust in the focal organization of engagement. For instance, Dove's company prosperously engages (potential) customers by introducing them to its campaign for natural beauty. Another example is American

Express that creates customer trust using its member project. The two examples illustrate that individuals' engagement informs an opportunity for interaction that, if pleasant, results in trust.

Also, CE is positively associated with an individual's affective commitment toward the organization. Affective commitment is defined as "the psychological attachment of an exchange partner to the other and is based on feelings of identification, loyalty, and affiliation." Indeed, affective commitment shows a psychological bond, motivating the customer to stay in a relationship with an organization. If the benefit resulted from this relationship is perceived high enough, greater affective commitment is produced. The study also asserts that CE is "positively associated with an individual's word-of-mouth activity regarding the organization he or she associates with his or her focus of engagement" (Vivek, Beatty, & Morgan, 2012, 136). In general, organizations view word of mouth as a beneficial tool that may include relating auspicious experiences, recommendations to others, and even "conspicuous display." Researchers believe that pleased customers are likely to spread positive word of mouth and advocate the brand. So, once customers engage with a brand, they become more likely to provide others with positive word of mouth (Vivek, Beatty, & Morgan, 2012).

To continue, the study under discussion also mentions that CE is "positively associated with an individual's loyalty to the brand, organization, or offering he or she associates with his or her focus of engagement." To be more precise, brand loyalty refers to "the biased behavioral response expressed over time by some decision-making unit, concerning one or more alternative brands out of a set of such brands, as a function of evaluative psychological processes." It should be noted that CE differs from brand loyalty as CE does not evaluate brands. Another difference is that CE does not involve behavioral decision-making concerning repurchase, as we already mentioned that CE is a concept beyond purchasing. On the other hand, CE's cognitive, affective,

behavioral, and social components relate to experience rather than an exchange. That said, the engaged consumers tend to connect with the company or brand that he/she associates with the engagement. This connection, in turn, informs a higher likelihood of positive behavioral responses toward the brand and organization. Besides, an engaged consumer, having developed modified favorable attitudes toward a product, company, or brand that is subject to his/her engagement, may feel more loyal to the entity (Vivek, Beatty, & Morgan, 2012).

Another proposition offered by the study is that CE is "positively associated with greater brand community involvement with the brand that is the focus of his or her engagement." To be more precise, every community contains three cores, one of which is the intrinsic connection members feel toward one another. The members may also feel different from those out of the community. The other component is the "presence of shared rituals and traditions." A sense of moral responsibility to the community as a whole is the other component. Through the notion of shared understanding, shared beliefs, and shared concerns, members of a community render solidarity. Following the same notion, scholars came up with the concept of "brand community," in which an individual gains status when he/she experiences brand activities, and the likelihood of maintaining membership increases if the experience is deemed positive (Vivek, Beatty, & Morgan, 2012).

Finally, the study proposes that "increased brand community involvement by the individual" is positively associated with his participation and involvement with the focus of engagement. In their study, Vivek et al. (2012), through their interviews, found that engaged customers strengthen brand communities and, thus, influence the design process. They state that such involvement connects communities and participating customers through a feedback loop. For instance, when Harley-Davidson discovered an increasing trend of motorcycle customization

after purchasing among its customer, the company involved its customers in creating custom accessories.

In another study by Barger et al. (2016), a framework illustrating CE's antecedents and consequences is put forward (see Figure 18). In particular, they have dealt with CE in the context of social media. They argue that large-scale commercial studies have shown that engagement continues to be a problem for social media users. They believed that few companies focus on engaging customers via social media. They also mention that since thick data and advanced analytical methods provide companies with a breadth of opportunities to engage their potential customers, companies have failed to do so.

Moreover, Barger et al. (2016) numerate some culprits for the forgoing gap in using social media for CE. First of all, they discuss that as social media is a relatively recent marketing phenomenon, companies have yet to find how engagement should be created, tracked, and measured. The second recognized culprit pertains to the fragmented nature of social media. These challenges contribute to companies' difficulties in tracking and coordinating their efforts. This fragmentation, accompanied by "content saturation" across channels, appears to have cognitively perplexed consumers. Consequently, consumers tend to ignore the content that they cannot apprehend. Lastly, as marketers heavily rely on social media to pass their sales and promotion news to their customers, customers will likely develop a negative or neutral impression toward such companies' equity.

Chapter 3. Empirical Analysis and Results

3.1. Empirical Context

In December 2019, a new coronavirus (SARS-CoV-2) emerged, sparking an acute respiratory syndrome epidemic (COVID-19) in humans, centered in Wuhan, China. Within three months, the virus had spread to more than 118,000 cases and caused 4,291 deaths in 114 countries, leading the World Health Organization to declare a global pandemic. The pandemic has led to a massive global public health campaign to slow the spread of the virus by increasing handwashing, reducing face touching, wearing masks in public, and public distancing (Bavel et al., 2020).

COVID-19 pandemic is currently ravaging the world. Its consequences have brought enormous pressure to the economy, humanity, and its environment. The World Health Organization has declared it a global health concern. While efforts to develop pharmaceutical interventions for COVID-19 are underway, the social and behavioral sciences can provide valuable insights for managing the pandemic and its impacts (Bavel et al., 2020).

Several national governments have applied lockdown restrictions to reduce the infection rate in response to the coronavirus disease. On March 9, 2020, Italy was the first European country to apply a national lockdown in response to the spread of novel coronavirus disease. Following Italy and China, other governments have adopted national lockdowns and mobility flows to decrease the transmission rate of COVID-19 (Bonaccorsi et al., 2020).

The first known American deaths occurred in February but were not known to be caused by COVID-19 until April. By mid-April, cases were confirmed in all fifty U.S. states, the District of Columbia, and all inhabited U.S. territories. On March 13, President Trump declared a national emergency. In late March, the administration started to use the Defense Production Act to direct industries to produce medical equipment. By April 17, the federal government approved disaster declarations for all states and territories. The second rise in infections began in June 2020, following relaxed restrictions in several states. State and local responses to the outbreak have included prohibitions and cancellation of large-scale gatherings (including festivals and sporting events), stay-at-home orders, and the closure of schools (Wikipedia 2020b).

In Canada, the virus reached **Canada** on January 27, 2020, after an individual who had returned to **Toronto** from **Wuhan, Hubei**, China, tested positive. As of October 29, 2020, there have been approximately 228,500 confirmed cases, over 191,200 recoveries, and over 10,000 deaths in the country. The Government of Canada has released modeling anticipating 11,000–22,000 deaths throughout the pandemic, assuming more robust epidemic control (Wikipedia 2020b).

The impact of the global pandemic on business and consumers forced companies to reassess their marketing and push them to bolster substitutes for traditional in-person and in-store communication channels (Pantano et al., 2020). The crisis also made companies revisit their digital marketing presence almost overnight, working from home became a new routine, and consumers increased online spending and use of social media. In sum, the pandemic triggered a need for companies to modify their online presence to reach and connect with customers in this time of crisis (Sharma, Adhikary, & Borah 2020).

3.2. Data Sources and Measurements

3.2.1. Social Media Big Data and Data-driven Approaches

The availability of big data from social media for marketing research is unprecedented. Social media data can provide insights into various phenomena and influence processes from personality traits to political behaviors. In marketing, scholars are investigating the role of big data regarding conventional methods, theory building, and formal scientific reasoning. Hybrid approaches, which include conventional methods and data-driven methods, are becoming popular. That said, scholars tend to side with either of the two methods, highlighting the strengths of their ideal one. Some have gone so far as to suggest the absolute advantages of big data. Although there are advantages attributed to social media data, some disadvantages exist (Shah, Cappella, & Neuman 2015).

3.2.2. Advantages of Social Media Big Data and its Applications

Social media data can help companies reach out to and engage with their customers efficiently, compared to traditional communication channels. Social media presence facilitates

conversation with people and promotes sharing ideas. As a result, it not only can help companies to gain insight into consumers per se, but also the conversation dynamics. Companies can modify the conversation with their customers from a monologue level to a dialogue level and, in turn, enhance customer-brand relationships (Colicev et al., 2018; Kietzmann et al., 2011; Jenkins, Ford, & Green 2013). The advantages of social media data include the capability of capturing revealed behavior (C. Lee & Kahle 2016), real-time nature (Hausmann et al., 2018), and computer-aided analyzability (Shah, Cappella, & Neuman 2015).

One of the most critical attributes of social media is that it naturally occurs. To be more precise, the traditional methods of the social sciences, such as surveys and experiments, involve some degrees of intervention performed by researchers. Such intervention may be problematic as they may unintentionally treat their experimental, control groups, and respondents differently, shaping their behavior and responses. Also, social desirability biases, and self-report biases, even tried to be mitigated, are more or less inevitable. On the other hand, social media data form mainly in the absence of the items mentioned above that interfere with the data collecting processes (Shah, Cappella, & Neuman 2015). Researchers have recognized that the context of social media permits the study of behaviors that individuals do not overtly show in any other context. For example, Gearhart and Zhang (2014) have examined opinion expression and gay bullying in social media. Other subjects, such as abortion, national election, and tolerance, are also investigated in a context that may allow for more unbiased data. Also, while consumers have little control over initial exposure to traditional advertisements, they decide whether or not to communicate with firms on social media. This opt-in nature of social media makes it a suitable platform where consumers are more likely to manifest their actual behaviors (C. Lee & Kahle 2016).

In addition, the real-time nature of big data is an advantage (Hausmann et al., 2018). When evaluated, the availability of large real-time reactions to media, political, environmental, and social events bolsters the possibility of immediate access to social discourse. Besides the real-time nature of big data, data-driven approaches can quickly gather and process large quantities of information (Shah, Cappella, & Neuman 2015). Moreover, data-driven methods for content analysis can reveal the linguistic attributes of content and the consumers' reactions to specific content (Berger et al., 2020). By analyzing these attributes and reactions, marketers can gain more insights and implications to adjust their future content (C. Lee & Kahle 2016).

3.2.3. Drawbacks of Social Media Big Data and its applications

Although big data and data-driven approaches facilitate more accurate forecasts in many areas, they often come short in theoretical justification. Some may laud these data-driven approaches as tools for engineering as useful computational artifacts; however, they may fail to produce deeper social scientific understanding (Shah, Cappella, & Neuman 2015).

Furthermore, there are concerns with the representativeness of big data once gathered from social media. Researchers have noted the flaws and distortions that stem from a chain of non-human accounts. To address this issue, some researchers have attempted to develop indicators for real online data. Social scientists are forging connections with specialists in mathematics, statistics, engineering, computer science, information systems, and high-throughput computing and are using tools often developed by industry and government, a step toward transdisciplinary work. If not correctly dealt with, the forgoing distortions can seriously undermine the validity of data gathered online (Shah, Cappella, & Neuman 2015).

3.2.4. Fortune 500 Firms' Twitter Data

We used Twitter data from Fortune 500 firms posted from January 2020 until the end of August 2020. Not all Fortune 500 companies had Twitter accounts. We scraped Twitter data from 290 company accounts using Twitter's front-end API. As we were interested in company-initiated messages, we excluded customer comments and company replies which usually involve conversations with the firm's customer service representatives. For example, Walmart frequently answered questions about the store's return policies. Our sample includes 56,770 tweets made by Fortune 500 companies during this period. We cleaned the retrieved tweets (before inputting them in the LIWC software) by removing hashtags, links, numeric and non-alphabetical characters such as emoticons (Kaul et al., 2020; Maniktala et al., 2020). These were treated as waste since we did not extract any information from them, and the LIWC software would not process them. This step improves the performance of text analysis algorithms, including the LIWC software that we used to measure expressions of value words in tweets (Kaul et al., 2020).

As mentioned in Chapter 2, this study considers the tweets by the Fortune 500 companies as we found that other data for such companies are relatively readily accessible. These data (e.g., the social responsibility ratings) may provide the necessary information in our following future research, as discussed in Chapter 4. Moreover, as the Fortune 500 companies are the largest

publicly traded United States companies, we were curious about their communications and promotional strategies in times of crisis (Fortune 500, 2021).

3.2.5. Measuring Personal Values from Twitter Data

In this study, we adopted the Personal Values Dictionary (PVD) developed and validated by Ponizovskiy et al. (2020). The dictionary comprises more than 1000 value-laden terms that detect the presence of the ten basic personal values specified in Schwartz’s typology. The PVD demonstrates high levels of reliability, comparable to other recent language-based personality assessment tools. Appendix F shows the details of this dictionary, including the words associated with each Schwartz value. To illustrate the face validity of the PVD value classification abilities, in **Table 3**, we provide examples of tweets for each personal value, highlighting words found in the PVD.

Table 3: Examples of Tweets that Express Schwartz's Values

Values	Examples from our Data
Achievement	<p>“Our Black Employee Success Team gives all employees the opportunity to be their BEST through their recruiting, mentorship, leadership development, management engagement, and community outreach. We celebrate their achievements every day.”</p> <p>“Our Abilities in Abundance program offers highly successful skills development programs, job training, & placement opportunities for individuals with disabilities.”</p>
Benevolence	<p>“Today we celebrate all of the fathers and father figures. Thank you for providing the love and guidance that helps strengthen our families and communities. Happy Father’s Day!”</p> <p>“Concerts aren't the same without your squad! Tag your concert buddies & share your favorite memory with them below! “</p>
Conformity	<p>"When a team leader is fully engaged, 65% of their team is fully engaged. People are more engaged if they feel they are on a team and are 12x more engaged if they trust their team leader."</p> <p>“We lead together. Respond together. Innovate Together. We are more resilient, persistent, and engaged when we go together.”</p>
Hedonism	<p>“What show left you playing like the heroes afterward as a kid? Who’s the best TV cartoon hero?”</p> <p>“Coffee + Beer = delicious dynamic.”</p>
Power	<p>“What can history teach us about the #coronavirus and investing? Find out below from Rob Clarfled, Executive Chairman of Clarfled Citizens Private Wealth.”</p>

	“We continue to see strong growth in our e-commerce business , with sales up over 120% in March.”
Security	“We updated our safety playbook to include COVID-19 protocols.”
	“Take advantage of the tax-benefits life insurance can add to your retirement portfolio like tax-free loans, tax-free death benefits, and more.”
Self-direction	“When it comes to finding spring cleaning motivation , just think : less mess means less stress.”
	“ Threats, uncertainty , and anxiety can affect our business decision -making in times of crisis . See how you can avoid short-term thinking pitfalls by taking smart actions in times like these.”
Stimulating	“Guilty pleasure time, what's in your online order ?”
	“Flexibility, passion , and curiosity fuel Sally Spratt’s hustle. Here’s is how she blends business and creativity to build something luxurious.”
Tradition	“Today, we remember those who lost their lives protecting our freedom . Your sacrifice will never be forgotten.”
	“IKEA Spain and @mccann_mw Madrid launch #YoMeQuedoEnCasa (I Stay Home) created in the spirit of celebrating our homes.”

3.2.6. Model Specification

As the next step, we aggregated tweets made by firms to create firm-level panel data. The reason behind aggregating data at the firm level is to control firm-level unobservable variables that may drive CE. Examples of such unobservable variables are customer loyalty, brand reputation, number of followers, and marketing expenditures.

We also control for the time-effect by adding dummy variables for each month of the year in our sample, allowing us to control for variations in customer engagement driven by other time-varying unobservable variables. Examples of such unobservable variables that vary over time are the daily number of new COVID-19 cases and the daily deaths. Public sentiment varied greatly throughout the pandemic (McKinsey 2020). Thus, by controlling for the month of the year, we can control other time-specific unobservable variables that simultaneously occurred.

Accordingly, we estimate the following regression equation:

$$\begin{aligned}
& \log(\text{customer engagement} + 1) \\
&= \beta_0 + \sum_{v \in \text{Schwartz values}} \beta_{1v} \text{Values} + \beta_2 \text{post lockdown} \\
&+ \sum_{v \in \text{Schwartz values}} \beta_{3v} \text{Values} \times \text{post lockdown} \\
&+ \sum_i \gamma_i D_{Fi} + \sum_j \delta_j D_{Mj} + \text{controls} + \varepsilon \quad (1)
\end{aligned}$$

where, $\log(\text{customer engagement} + 1) = \log(\# \text{ of likes} + \# \text{ of replies} + \# \text{ retweets} + 1)$; the addition of one is to ensure that we do not have undefined values due to $\log(0)$ (i.e., cases that do not have any likes, retweets, or replies). Furthermore, we take the logarithm of engagement because engagement in social media grows exponentially due to the network effect of social networking websites. Thus, the standard approach in social media studies is to use logarithmic measures of engagement (e.g., see Davis et al., 2019, D. Lee, Hosanagar, & Nair 2018, Stephen et al., 2015). Other variables in Equation (1) are:

- 1) **Values:** These are the Schwartz values we described in the previous chapter. Following the recommendations by Schwartz (2009), we included security, conformity, tradition, benevolence, universalism, self-direction, stimulation, hedonism, achievement, and power in our regression model.
- 2) **Post lockdown:** This is a dummy variable that takes the value of one for the time period after March 13th, 2020, and zero otherwise.
- 3) **D_{Fi} :** This is a dummy variable for firm i in our sample. We have one dummy variable for each firm. These dummy variables help control for firm-specific unobservable variables such as marketing expenditure or the number of followers (we assume that the number of followers is relatively stable over our study period).
- 4) **D_{Mi} :** This is a dummy variable for month j in our sample. We have one dummy variable for each month.
- 5) **Controls:** In addition, we control for the hashtags and media (i.e., videos and pictures) in the tweets made by a company using two dummy variables of “has hashtags” and “has

media.” We also control for the length of tweets by including a word count variable and post-George-Floyd-murder for the dates that followed the event.

We used the *13th of March 2020* as the dividing point before and after the crisis. Thus, we assume that the period before March 13, 2020, to be the pre-crisis period in our sample, while the period after March 13 to be the crisis period. We believe that assuming March 13th as the beginning of the crisis is a reasonable assumption because on March 11th; the World Health Organization declared COVID-19 a pandemic, followed by the United States declaring a national emergency on March 13th, 2020 (Think Global Health 2020).

George Floyd’s murder is another major event that happened during the period of our study. On May 25, 2020, George Floyd, a 46-year-old black man, was murdered in Minneapolis, Minnesota, United States, while being arrested for alleged use of a counterfeit bill. The following day, after videos made by witnesses and security cameras became public, all four officers were dismissed. Floyd's murder resulted in worldwide protests against police brutality, police racism, and lack of police accountability (Wikipedia 2020a). Although this event is not the main focus of this study, we were motivated to mark it in the diagrams because it was culturally significant.

3.3. Results

This section presents the results of our analysis and discussions. First, we show how the personal values in the companies’ tweets changed over time and particularly, from before the COVID-19 crisis to after it. Next, we show the change in CE with different Schwartz values included in the company tweets before and after the COVID-19 crisis. The remainder of this section presents the results of our analyses and discussions about the interpretation of our observations.

3.3.1. Personal Values Over Time

This section aims to show the change in the personal values embedded in the company tweets over time. Figure 2 to Figure 5 shows the monthly average of values per tweet over time in absolute terms monthly. As shown in Figure 2, after the crisis, the average use of benevolence words rises in company tweets, followed by a decline to levels similar to the pre-lockdown period. There is also a deferred short-term rise in universalism value, which coincides with the

murder of George Floyd. In Figure 3, we can see a rise in conformity and security values following the lockdown. Tradition also slightly rises after the crisis, followed by a decline. In Figure 4, we see that the average number of achievement and power words is relatively stable over time. Finally, in Figure 5, we can see that the average number of hedonism and stimulation words declines after the start of the COVID-19 crisis. Self-direction declines following the crisis and then returns to earlier levels. Also, Figure 22 to Figure 31 in Appendix G show the daily average of values per tweet over time (in absolute values).

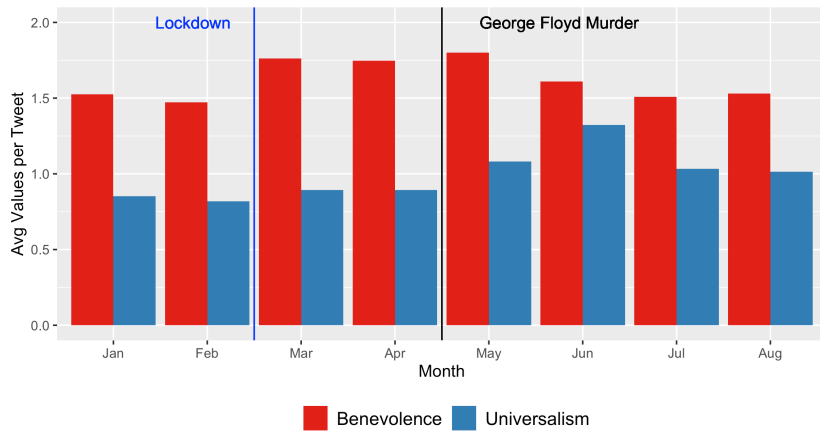


Figure 2: Average benevolence and universalism values per tweet over time

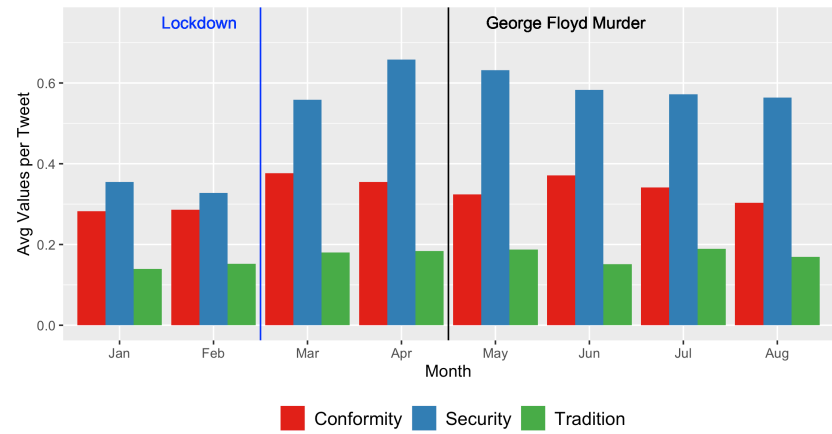


Figure 3: Average conformity, security, and tradition values per tweet over time

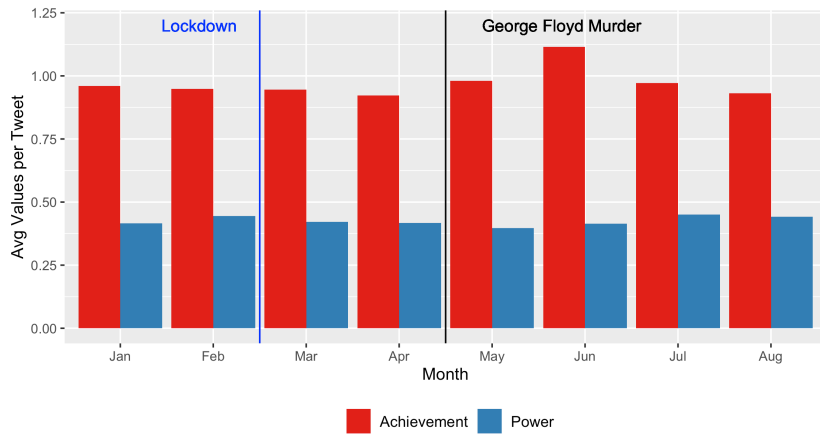


Figure 4: Average achievement and power values per tweet over time

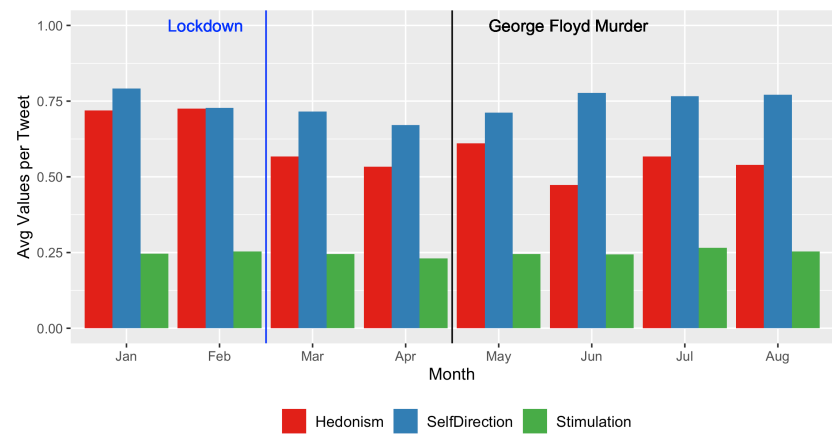


Figure 5: Average hedonism, self-direction, and stimulation values per tweet over time

Next, we focus on understanding the *relative change* in the emphasis on personal values over time. Figure 6 visually represents the results in **Table 4**, showing the relative emphasis of the personal values by month, using *mean-centered data*. **Table 5** shows the comparisons of personal values by month.

Table 4: Personal Values Index by Month

	Month							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Security	-.26	-.23	-.15	-.12	-.07	-.21	-.12	-.17
Conformity	-.32	-.33	-.35	-.39	-.41	-.40	-.40	-.36
Tradition	-.50	-.52	-.60	-.61	-.57	-.65	-.62	-.59
Benevolence	.06	.16	.33	.59	.53	.33	.22	.25
Universalism	.07	.00	.12	.07	.13	.43	.11	.07
Self-direction	.46	.47	.46	.40	.38	.48	.51	.47
Stimulation	-.12	-.15	-.18	-.20	-.20	-.22	-.14	-.11
Hedonism	-.34	-.37	-.51	-.53	-.48	-.53	-.45	-.49
Achievement	.64	.61	.57	.37	.40	.56	.54	.50
Power	.32	.36	.31	.43	.29	.21	.34	.43

Table 5: Comparisons of Personal Values Index by Month

	Month							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
Security			AB	ABF	ABCFH		ABF	A
Conformity	DEFG	DEFG	E					
Tradition	CDEFGH	CDEFGH	F		FG			F
Benevolence		A	ABG	ABCFGH	ABCFGH	ABG	A	AB
Universalism			B		B	ABCDEGH	B	
Self-direction		E				E	DE	
Stimulation	DEF						F	CDEF
Hedonism	CDEFGH	CDEFGH					CDF	
Achievement	DEGH	DEH	DE			DE	DE	D
Power		F		ACEF			F	ACEF

Results are based on two-sided tests assuming equal variances. For each significant pair, the key in the category with the larger mean. Significance level for upper case letters (A, B, C): .05

Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

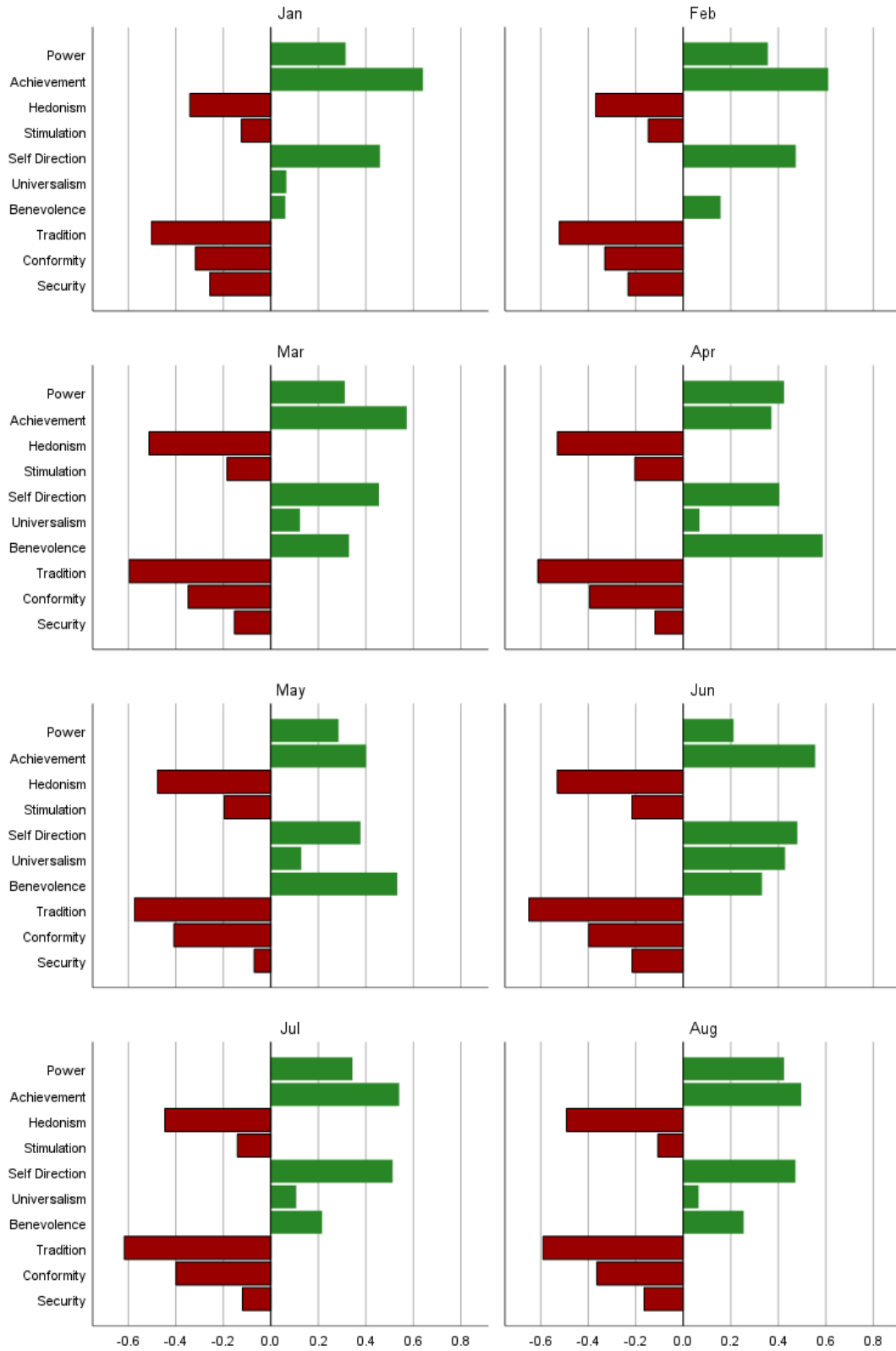


Figure 6: Relative emphasis of personal values by month

3.3.2. Customer Engagement with Personal Values: The Direct Effect

This section investigates how individuals have responded to the change that firms made using personal value words in their Twitter content following the COVID-19 crisis. Our regression analysis of the association between personal values and CE excluded the two values of tradition and hedonism from the model. Schwartz (2009) recommends entering up to eight mean-centered values (out of the ten types) into the regression model to reduce multicollinearity or intercorrelations. We opted to exclude the values of tradition and hedonism because we noticed that these two values are the least talked about in the lockdown based on our results from the previous section (see Figure 6). Theoretically, these values were at odds with the overall cultural context, which was somewhat chaotic and unique (the antithesis of tradition) due to a severe deadly virus that impeded travel and socialization (a hedonism-free period).

Moreover, we explored the effect of other variables (in addition to the Schwartz values) that may contribute to changes in CE following the crisis. *Post Lockdown* is a dummy variable designed to capture the effect of the lockdown on CE. *Post George* is purposed to capture the impact of George Floyd's murder on CE. *Has Media* and *Has Hashtag* are also two dummy variables purposed to reveal how social media tactics, including photo/video media and hashtags, affect CE (D. Lee, Hosanagar, and Nair 2018). Also, the dummy variables of *# of value words* and *word count* control for the effect of the value words in the tweets and the tweets' word count. **Table 6** shows the correlation structure of the variables in our study.

Table 6: Correlation Matrix

	Hedonism	Achievement	Benevolence	Conformity	Power	Security	Self-direction	Stimulation	Universalism	Post Lockdown	Post George	Has Media	Has Hashtag	Word count	# of value words
Hedonism	1														
Achievement	-0.159***	1													
Benevolence	-0.106***	-0.180***	1												
Conformity	0.023***	-0.136***	-0.146***	1											
Power	-0.120***	-0.156***	-0.174***	-0.148***	1										
Security	-0.028***	-0.170***	-0.079***	-0.017***	-0.159***	1									
Self-direction	-0.121***	-0.157***	-0.142***	-0.105***	-0.205***	-0.128***	1								
Stimulation	-0.036***	-0.132***	-0.150***	-0.020***	-0.133***	-0.072***	-0.100***	1							
Universalism	-0.122***	-0.121***	-0.113***	-0.059***	-0.176***	-0.113***	-0.127***	-0.117***	1						
Post Lockdown	-0.055***	-0.046***	0.081***	-0.028***	0.005	0.041***	-0.011*	-0.016***	0.030***	1					
Post George	-0.019***	-0.005	-0.014**	-0.013**	-0.004	0.008*	0.014***	0.006	0.034***	0.534***	1				
Has Media	0.009*	0.003	-0.007	0.001	-0.011**	-0.007	0.005	0.009*	0.0004	0.002	0.057***	1			
Has Hashtag	-0.011*	0.029***	-0.008	0.004	-0.052***	-0.008	0.028***	0.010*	0.009*	-0.036***	-0.019***	-0.031***	1		
Word count	-0.101***	0.055***	0.057***	0.028***	-0.224***	0.052***	0.068***	0.034***	0.066***	0.100***	0.061***	0.016***	0.073***	1	
# of value words	-0.323***	0.191***	0.157***	-0.256***	0.116***	-0.068***	0.129***	-0.093***	0.095***	0.073***	0.036***	-0.019***	-0.012**	0.071***	1

*p<0.1; **p<0.05; ***p<0.01

Table 7 shows our results from running the regression. Model (1) is the baseline regression model with only the control variables included as regressors. Model (2) is the full model in which we included the eight Schwartz values as regressors in addition to the previously discussed control variables. As we can see in Table 7 Model (2), CE's correlation with all eight values is negative, suggesting an overall decrease in CE with the highly charged tweets with the Schwartz values compared to those low on the Schwartz values. Also, we can see an increase in CE post-lockdown. Such an increase in CE might be related to the lockdown effect that required people to stay home, leaving them with more time to spend on social media than pre-lockdown.

On the other hand, CE seems to have decreased after Floyd's murder. Part of such a decrease might be due to the prevalence of the new normal after the COVID-19 crisis. To be more precise, Floyd's murder happened well after the lockdown announcement, with which a surge in CE with most of the Schwartz values was observed. As a result, people might have been accustomed to the new normal by Floyd's murder, already reducing their engagement with the Schwartz values with which they had once heightened their engagement. Also, Floyd's murder has likely contributed to lowered CE with specifically firm-generated content on Twitter. Other research has also shown that individuals might focus on some news after the news break in their social media conversations while leaving other news untouched (Zhong & Schweidel 2020). In Floyd's death, people likely focused on the tweets from other sources rather than the Fortune 500 companies.

Media in tweets seem to be correlated with CE's increase, while hashtags seem to have had the opposite effect on CE. Lastly, CE's correlation with the dummy variables of *word count* and *# of value words* is negative, suggesting that individuals have become less engaged with long tweets than short tweets and value words than non-value words. **Table 7** Model (3) and (4) repeat the results of Model (1) and Model (2), respectively, but they also include month dummies as additional control variables. As we can see by comparing Model (3) and (4) with Model (1) and (2,) respectively, the results stayed consistent after adding dummies for month.

Table 7: Regression results: Schwartz Values & CE – Direct Effect

	log(engagement+1)			
	Model (1)	Model (2)	Model (3)	Model (4)
	Without Month Controls		With Month Controls	
Security		-0.076*** (0.007)		-0.077*** (0.007)
Conformity		-0.049*** (0.009)		-0.050*** (0.009)
Benevolence		-0.033*** (0.007)		-0.033*** (0.007)
Universalism		-0.040*** (0.007)		-0.040*** (0.007)
Self-direction		-0.058*** (0.007)		-0.058*** (0.007)
Stimulation		-0.077*** (0.007)		-0.078*** (0.007)
Achievement		-0.061*** (0.006)		-0.061*** (0.006)
Power		-0.044*** (0.006)		-0.044*** (0.006)
Post Lockdown	0.346*** (0.017)	0.341*** (0.017)	0.434*** (0.038)	0.425*** (0.038)
Post George	-0.236*** (0.016)	-0.231*** (0.017)	-0.032 (0.046)	-0.029 (0.046)
Has Media	0.165*** (0.019)	0.166*** (0.019)	0.181*** (0.019)	0.181*** (0.019)
Has Hashtag	-0.093*** (0.014)	-0.089*** (0.014)	-0.091*** (0.014)	-0.087*** (0.014)
# of Value Words	-0.024*** (0.001)	-0.017*** (0.002)	-0.024*** (0.001)	-0.017*** (0.002)
Word Count	-0.019*** (0.001)	-0.018*** (0.001)	-0.019*** (0.001)	-0.018*** (0.001)
Constant	3.340*** (0.024)	3.314*** (0.025)	3.352*** (0.027)	3.324*** (0.028)
Month Dummies	No	No	Yes	Yes
Observations	56,955	56,955	56,955	56,955
R ²	0.033	0.037	0.035	0.038

*p<0.1; **p<0.05; ***p<0.01

As table 7 shows, R-square has a rising trend from model 1 to model 4. One explanation for such increase is that as the number of variables considered in the regression model increases from model 1 to model 4, in each model, the newly added variables come to explain part of the variance that used to be unexplained in the previous model(s). As a result, R-square keeps rising as the number of models increases.

3.3.3. Customer Engagement with Personal Values: The Interaction Effect with Lockdown

This section shows how CE with the Schwartz values included in the company tweets changes following the COVID-19 crisis. For each of the values, we first explain our expectation of how each value might change based on the literature. Subsequently, we show our findings of the changes in CE with each value after the crisis compared to the CE level with tweets of similar characteristics (e.g., a similar amount of value words) before the crisis.

Bardi et al. (2009) suggest that the circular structure of Schwartz's value implies that increases in the importance of any given value follow decreases in the importance of opposing values in the circle. For instance, while the perception of risk and threat is expected to increase the importance of values of self-protection (e.g., security and tradition), the importance of growth values such as stimulation and self-direction are expected to decrease. Similarly, Sortheix et al. (2019) showed that the importance of hedonism declined among young European individuals following the financial crisis after 2008. Also, hedonism, self-direction, and stimulation (openness to change values) are expected to lose their importance in the wake of the crisis. Thus, theoretically, we expect that CE with hedonism values decreases following the coronavirus crisis. Also, we expect the same direction of change in CE with the stimulation and self-direction values.

Previous studies have reported increased and decreased importance of the achievement value once individuals experienced a crisis. Achievement, a self-enhancement value, aims to protect oneself by actively controlling or impeding threats by gaining control over people, resources and demonstrating competence. Sortheix et al. (2019) argue that during the global financial crisis, while the importance of the achievement values increases in the countries with low welfare expenditures, it decreases in the countries with high welfare expenditures. As our

data is based on the tweets by the Fortune 500 companies based in the US, we expect an increase in CE with the achievement value, given that the US is relatively low on welfare expenditures (Washington Post 2015). Power, similar to achievement, is a self-enhancement value. Sortheix et al. (2019) discuss that, at the time of the global financial crisis and in the countries low on welfare expenditures, individuals attempt to gain power to control their resources and compete with others in the case of resource scarcity. However, in the same conditions, the importance of the power values declines in the countries with high welfare expenditures. So, we also expect to see an increase in CE with the value of power.

Benevolence is a self-transcendence value. Although risk perception reduces the importance of growth values (contrary to self-transcendence values), we expect that benevolence would rise in importance. Benevolence focuses on protecting and well-being of close others such as friends and family. In stress, individuals seek and lend support to their close others (Sortheix et al., 2019). Consequently, we expect that CE with the benevolence value increases during a crisis such as the COVID-19 pandemic.

Moreover, the literature has reported an increase and a decrease in universalism (a self-transcendence value) in times of crisis. For example, Sortheix et al. (2019) reported an increase in universalism in the countries high in welfare expenditures following the global financial crisis. Nevertheless, they found a decrease in the universalism importance in the countries low in welfare expenditure. Likewise, we expect a decrease in CE with the value of universalism following the COVID-19 crisis.

Also, conservation values (including security, conformity, and tradition) are predicted to gain importance during the crisis. Conservation values aim at avoiding conflict, unpredictability, and change through passive fitting while conforming to group expectations. Also, these values rely on traditional institutions and modes of thought (Sortheix et al., 2019). Thus, we expect to see an increase in engagement with conformity value during the COVID-19 pandemic crisis. Likewise, we expect to see an increase in engagement with security and tradition values at the time of a crisis.

To understand whether the expectations mentioned above obtain in our study, we start by plotting CE with the tweets that have different extents of the Schwartz values over time. Using the sample of tweets with non-zero Schwartz values, we plotted the total CE with the tweets with different extent of Schwartz values over time in Figure 7 to Figure 16. As shown in Figure 7,

there is evidence of a decrease in CE with hedonism value post lockdown. This decrease is quite evident in the first few weeks after the start of the crisis. However, we see an uptick in CE with hedonism values around week 20. We suspect that the increase in engagement with hedonism after week 20 is related to customer habituation to new normal and the start of the summer. In addition, we suspect that a prolonged quarantine period led consumers to seek new means of entertainment, which some qualitative evidence could support. For example, during the first quarter after the start of the COVID-19 pandemic, Netflix, a streaming entertainment service company that provides subscription services streaming movies and television episodes, experienced a surge in its popularity after the current crisis, according to its stock market price and media reports (Forbes 2020). In addition, Fubo TV dramatically grew subscriptions during the crisis (Forbes 2020). Consistent with our results, these companies satiate hedonic needs via their entertainment (Oliver & Raney 2011).

Figure 8 illustrates evidence of a decrease in CE with the achievement value post-lockdown. Also, Figure 9 offers strong evidence that supports an increase in CE with the benevolence value post-lockdown. Also, based on Figure 10, the evidence suggests an increase in CE with the conformity value post-lockdown. Figure 11 seems to suggest an increase in CE with the power value shortly after the lockdown, followed by a drop in CE a few weeks after the start of the lockdown. An increase in CE with the security value after the lockdown is supported based on Figure 12. Figure 13 seems to suggest an increase in CE with the self-direction value after the lockdown. Figure 14 suggests an increase in CE with the stimulation value shortly after the lockdown, followed by a decrease in CE with the value. Figure 15 seems to suggest a slight increase in CE with the tradition value shortly after the lockdown, followed by a decrease in engagement with the value. Lastly, Figure 16 suggests an increase in CE with the universalism value shortly after the lockdown. Also, there is a surge in CE with universalism after week 20.

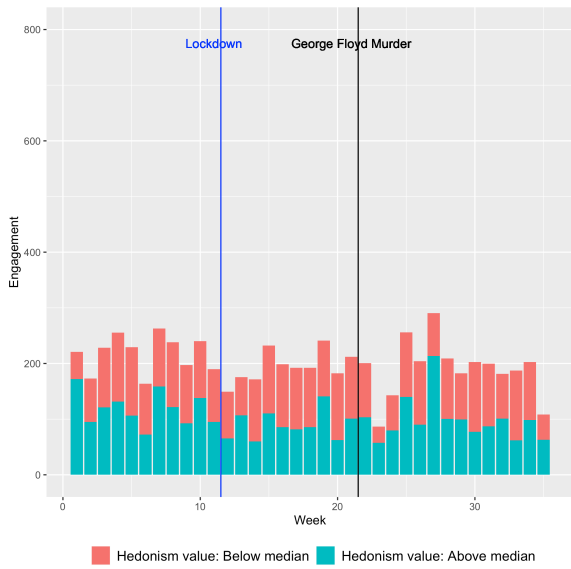


Figure 7: Engagement with hedonism value over time

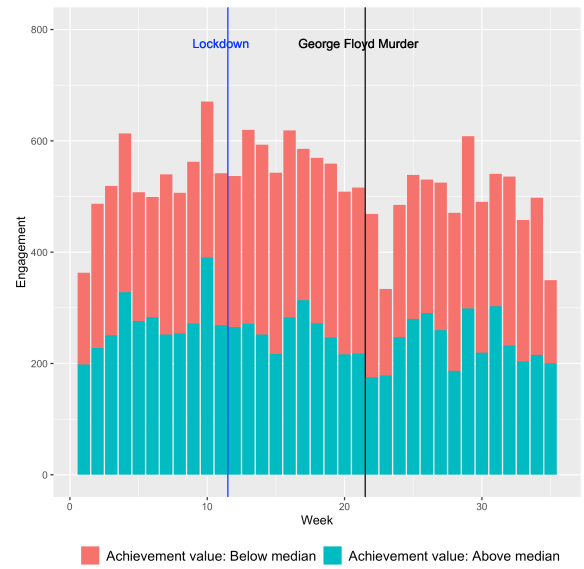


Figure 8: Engagement with achievement value over time

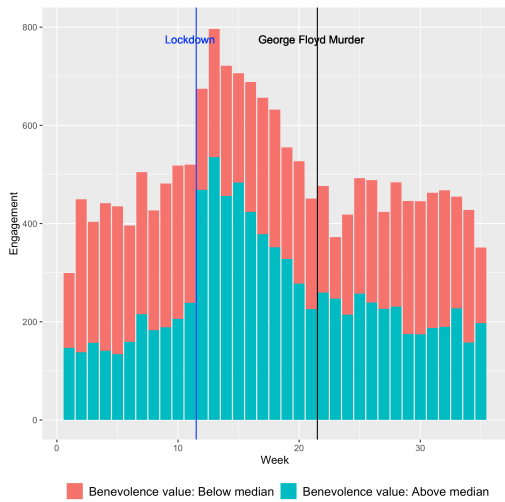


Figure 9: Engagement with benevolence value over time

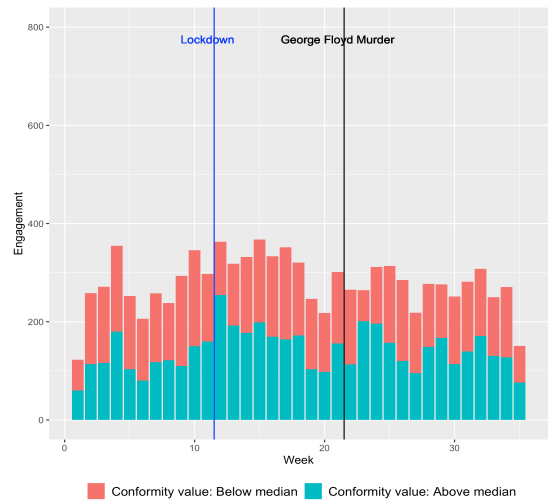


Figure 10: Engagement with conformity value over time

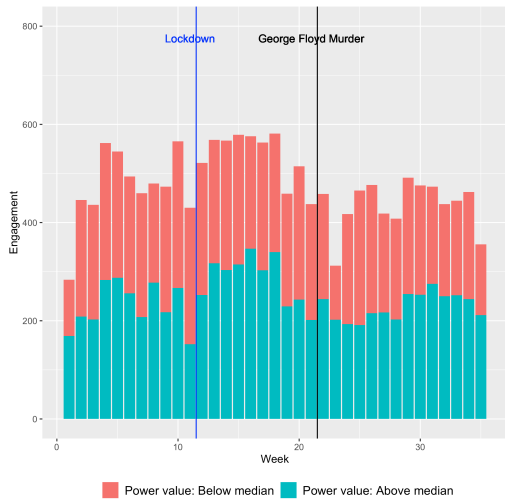


Figure 11: Engagement with power value over time

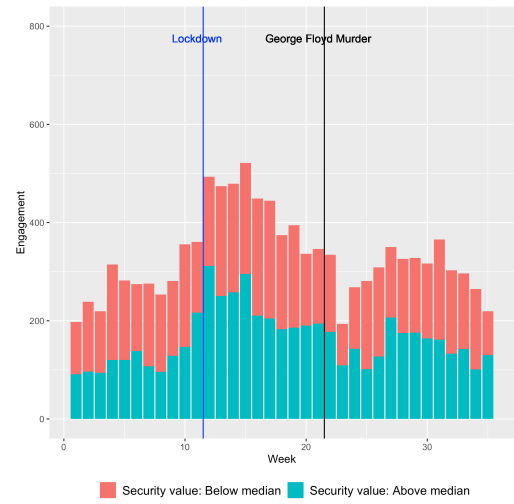


Figure 12: Engagement with security value over time

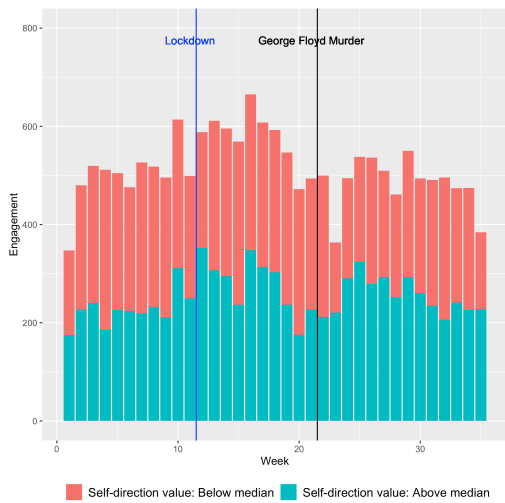


Figure 13: Engagement with self-direction value over time

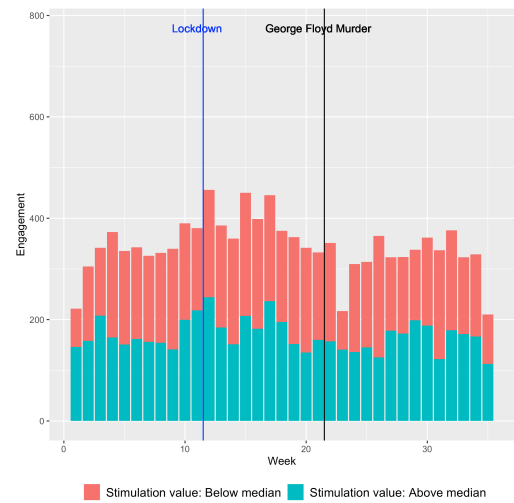


Figure 14: Engagement with stimulation value over time

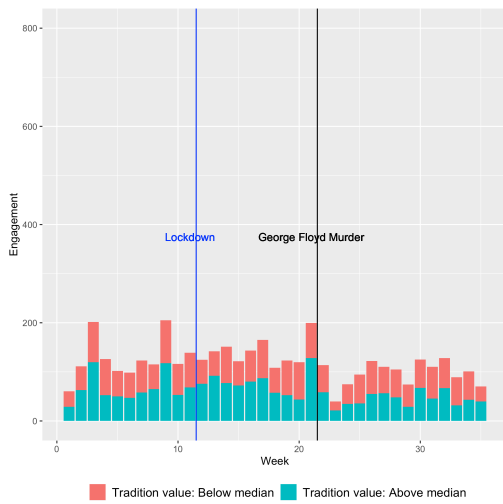


Figure 15: Engagement with tradition value over time

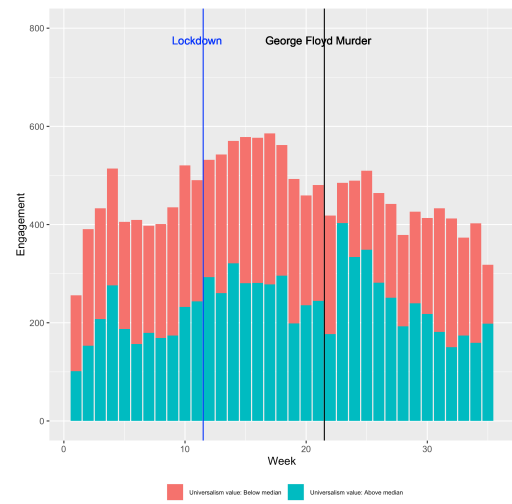


Figure 16: Engagement with universalism value over time

To further understand whether there is a statistically significant change in CE with the Schwartz values during the COVID-19 pandemic, we estimate the regression in equation (1) for the Schwartz values. As previously mentioned, we excluded the values of hedonism and tradition from our regression model because Schwartz (2009) recommends entering up to eight mean-centered values into the regression model. We specifically opted for excluding these two values from the ten Schwartz values because we noticed that they are the least talked-about values in the lockdown based on our results from the previous section (see Figure 6). The results are shown in **Table 8**.

In Table 8, Model (3) post-lockdown interaction estimates indicate significant increases in CE with personal values: conformity (+6.6%), universalism (+4.6%), achievement (+4.4%), benevolence (+4.3%), power (+3.4%), self-direction (+3.7%), and security (+2.6%). However, we did not find any statistically significant changes in CE with stimulation. Our results from running the regression model are consistent with our expectations, except for the results of universalism (we expected to see a decrease in universalism based on the literature) and stimulation for which no significant change in CE resulted.

Increased CE with universalism might be partly due to the nature of the COVID-19 crisis. The sickness, suffering, and death caused by COVID-19 dramatically affected the world in many ways. Consequently, many countries imposed lockdown regulations before the lockdown

announcement in the U.S. or shortly after (Wikipedia 2021). Given such a vast prevalence of the crisis in today's interconnected world where international travel, migration, and working abroad are commonplace, individuals might have perceived themselves psychologically close to those affected in their community and other parts of the world far from home. Consequently, these forces may have acted to increase engagement with the value of universalism during the crisis.

Finally, in Model (4) of Table 8, we added firm dummies to control the influence of firm characteristics and better understand the impact of values within the same firm's tweets. As we can see in Model (4) of Table 8, values have an overall negative impact on engagement (similar to the models without firm dummies). Consistent with models (2) and (3), we found that engagement with Schwartz values increases after the lockdown after controlling for firms. Also, due to the same reason explained for table 7, in table 8, R-square increases across the models from model 1 to model 4. The substantial increase in R-square from model 3 to model 4 signifies the significant role of firm-level control dummy variables in accounting for overall variation in consumer engagement.

Table 8: Regression results: Schwartz Values & CE – Direct and Interaction Effects

	log(engagement+1)			
	Model (1)	Model (2)	Model (3)	Model (4)
Security		-0.104*** (0.007)	-0.120*** (0.012)	-0.013* (0.007)
Conformity		-0.066*** (0.008)	-0.108*** (0.014)	-0.035*** (0.008)
Benevolence		-0.067*** (0.006)	-0.096*** (0.010)	-0.019*** (0.006)
Universalism		-0.072*** (0.006)	-0.102*** (0.011)	0.0002 (0.006)
Self-direction		-0.092*** (0.006)	-0.115*** (0.009)	-0.028*** (0.006)
Stimulation		-0.103*** (0.007)	-0.098*** (0.012)	-0.032*** (0.007)
Achievement		-0.095*** (0.005)	-0.123*** (0.009)	-0.011** (0.005)
Power		-0.077*** (0.006)	-0.098*** (0.009)	-0.020*** (0.005)
Post Lockdown	0.421*** (0.038)	0.420*** (0.038)	0.375*** (0.039)	0.398*** (0.023)
Post George	-0.028 (0.046)	-0.030 (0.046)	-0.028 (0.046)	0.027 (0.027)
Has Media	0.188*** (0.019)	0.185*** (0.019)	0.185*** (0.019)	0.014 (0.012)
Has Hashtag	-0.088*** (0.014)	-0.084*** (0.014)	-0.084*** (0.014)	0.050*** (0.009)
Word Count	-0.019*** (0.001)	-0.018*** (0.001)	-0.018*** (0.001)	0.002*** (0.0004)
Security × Post Lockdown			0.026* (0.015)	0.011 (0.009)
Conformity × Post Lockdown			0.066*** (0.018)	0.049*** (0.010)

	log(engagement+1)			
	Model (1)	Model (2)	Model (3)	Model (4)
Benevolence × Post Lockdown			0.043*** (0.012)	0.020*** (0.007)
Universalism × Post Lockdown			0.046*** (0.013)	0.021*** (0.008)
Self-direction × Post Lockdown			0.037*** (0.012)	0.008 (0.007)
Stimulation × Post Lockdown			-0.007 (0.015)	0.017* (0.008)
Achievement × Post Lockdown			0.044*** (0.011)	0.012* (0.007)
Power × Post Lockdown			0.034*** (0.012)	0.006 (0.007)
Constant	3.224*** (0.026)	3.258*** (0.027)	3.277*** (0.028)	2.264*** (0.117)
Month Dummies	Yes	Yes	Yes	Yes
Firm Dummies	No	No	No	Yes
Observations	56,955	56,955	56,955	56,955
R ²	0.029	0.036	0.037	0.677

Note: Model (4) also includes firm dummies to understand within-firm variations better.

p<0.1; **p<0.05; *p<0.01*

Table 9: Summary of Results Table 8 - Model (3)

Personal Values	Change in CE	Significant
Security	2.6%	Yes
Conformity	6.6%	Yes
Benevolence	4.3%	Yes
Universalism	4.6%	Yes
Self-direction	3.7%	Yes
Stimulation	-	No
Achievement	4.4%	Yes
Power	3.4%	Yes
Tradition	Omitted from the regression model	
Hedonism	Omitted from the regression model	

Chapter 4. Conclusions, Implications, Limitations, and Future Research

4.1. Conclusions

In this study, we attempted to observe how firms changed their content on Twitter by emphasizing personal values in the wake of a crisis. Our data comprises the tweets of the Fortune 500 companies posted in the eight months between January and August 2020. Additionally, we explored how individuals responded to such changes using behavioral indicators (the number of likes, retweets, and replies) as a proxy for CE. Individuals' values usually are fixed; however, their value priorities may change based on their living conditions. For this purpose, we employed Schwartz's values theory and the Personal Values Dictionary. We focused on the disruption and adaptation to the COVID-19 public health disaster that inflicted enormous social, economic, and environmental burdens worldwide.

Our initial investigation of the changing value priorities in company-initiated tweets showed that power, achievement, self-direction, universalism, and benevolence are the most emphasized values. Conversely, tradition and hedonism are the least prioritized values. On the consumer side, we found that customer engagement decreased with the Schwartz values, hashtags, value words, and long tweets (vs. short tweets). Also, a decrease in CE with the company tweets followed George Floyd's murder.

Moving on to the interaction effect of post-lockdown and the Schwartz values on CE, our findings showed increases in CE with most of the Schwartz values following the crisis. Despite our previous findings that showed increases in the conveyance of specific values, we observed an overall decrease in CE with the Schwartz values. Our results expectedly showed an increase in CE with the conservation values, including conformity and security, following the COVID-19 crisis. We did not investigate the correlation between CE and tradition as a conservation value because tradition was one of the least talked-about values following the COVID-19 crisis. Furthermore, CE with self-direction (openness to change value, like stimulation, and hedonism) increased after the crisis as expected, whereas we observed no significant change in CE with

stimulation. We did not investigate the correlation between CE and hedonism for the same reason that we excluded tradition.

As expected, CE with the self-enhancement values (achievement and power) increased following the crisis. Also, CE with benevolence as a value included in the self-transcendence values (benevolence and universalism) expectedly increased after the crisis. However, contrary to our expectations, CE with universalism increased after the crisis.

4.2. Implications

This study has some implications for marketers aiming at speaking to their audience efficiently. Our results indicate that consumers engage less with social media posts that focus on personal values instead of those that do not have such a focus. Consumers may view such posts as being ceremonial and sometimes mere words that are not essentially translatable into actions. It is also possible that our results are not wholly indicative of CE in all forms. To be more precise, we only considered CE in users' behavioral reactions to the company tweets (likes, replies, and retweets). However, CE can also take emotional forms and cognitive forms, which require other types of measurement (e.g., sentiment analysis) beyond the scope of this study (Calder, Malthouse, & Schaedel 2009; Wu, Rizoïu, & Xie 2018).

Moreover, as previously mentioned, literature has acknowledged challenges in defining engagement and measuring it (Wu, Rizoïu, & Xie 2018). Such difficulties may contribute to partial capturing (vs. complete capturing) of CE. Nevertheless, we observed an increase in CE with personal values at the time of crisis, suggesting a shift in the importance of personal values. Our study implies that marketers need to consider ongoing events, especially those that adversely impact their consumers, and adjust their marketing contents accordingly.

4.3. Limitations & Future Research

As for the limitations of this study, the relationship between CE and the values is described merely as correlational; although we claimed no causality, further research could improve causal identification. Also, as this study solely focused on the COVID-19 crisis, the generalizability of our results to other forms of crises (e.g., natural disasters) has yet to be

investigated. Additionally, as our data includes the tweets posted by companies based in the U.S. and people's responses to such tweets, generalization of our results to other populations has yet to be studied.

Moreover, this study explicitly considers the Schwartz values as consumers' personal values. Although Schwartz's model, used with the PVD, was found to be highly effective at capturing the elusive meanings of personal values in the texts, this does not preclude others from using other values frameworks (e.g., RVS, LOV) or algorithms (the one we abandoned) in future studies. More studies could deal with similar investigations as those of this study, using other personal values frameworks. Besides, we focused only on text and ignored the pictures and videos. Considering that 14.3% of the tweets studied contained pictures/videos, there might be an opportunity to investigate the visual elements. However, such a task might be challenging to be delivered by computer-driven approaches and require human coders (e.g., Padgett & Mulvey (2007) coded the values conveyed in commercials).

Furthermore, our dictionary-based measures of the Schwartz values could be further validated using more natural language processing techniques such as word embedding (Mikolov et al., 2013). Lastly, while we controlled for the firms' characteristics by including firm dummies in our models, we did not investigate what strategies contributed to the success of some firms in engaging their consumers compared to other firms. Future research may address such inquiry by employing latent class models to study the alignment of sets of values with topics (e.g., word embedding) more closely.

Also, in this study, a supplementary analysis of the tweets' content that can further evaluate consumers' engagement during the time of crisis is done using static topic models (see Appendix B). Notably, we used the latent Dirichlet allocation (LDA) topic model to simultaneously discover and quantify the topics in our sample of tweets. We also used Dynamic Topic Modeling (DTM) to model the evolution of content in Fortune 500 companies' tweets over time (see Appendix A). In future research, we also plan to explore the firm characteristics that work as the antecedents of consumer engagement. Examples of such characteristics could be the type of commercial transaction (B2B vs. B2C), corporate social responsibility scores, and dimensions of brand equity. We hope that this thesis provides a starting point for future research by demonstrating the viability of using text analysis methods to study continuity and change in personal values to derive insights for marketing.

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Appendix A.

Supplementary Analysis: Modeling Evolution of Tweets Content Using Dynamic Topic Modeling

As part of our textual analysis, we also used Dynamic Topic Modeling (DTM) to model the evolution of content in Fortune 500 companies' tweets. DTM is a family of probabilistic time series models developed by Blei and Lafferty (2006) as an extension to latent Dirichlet Allocation (LDA, Blei, Ng, & Jordan 2003) to capture “the evolution of topics in a sequentially organized corpus of documents” (Blei & Lafferty 2006, 113). Thus, to better understand DTM, we first briefly explain the underlying logic of static topic models such as LDA. In LDA, a word is the basic unit of discrete data which is chosen from the vocabulary of $\{w_1, \dots, w_V\}$. The vocabulary includes all possible words that are included in the whole set of documents, and V is the parameter representing the size of vocabulary. A document, $\mathbf{w} = \{w_1, \dots, w_N\}$, is a sequence of words denoted by N words. A corpus is a collection of M documents. Topics are a mixture of words that together generate the documents. K is the parameter representing the number of topics. LDA assumes that each document in the corpus is created through the following generative process:

- First, N (i.e., the number of words) is chosen from the Poisson distribution $Pois(\zeta)$.
- Second, topic proportions θ is chosen from a Dirichlet distribution $Dir(\alpha)$
- For each word in the document:
 - Choose a topic assignment $Multinomial(\theta)$.
 - Choose the probability that the word belongs to the selected topic from $Multinomial(\beta)$.

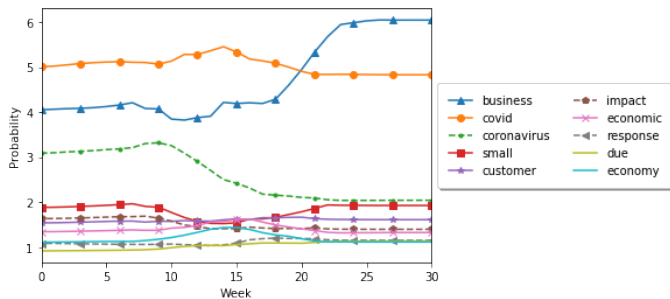
The generative process explained above implicitly assumes the “documents are *exchangeably* drawn from the same set of topics of documents” (Blei & Lafferty 2006, 114). However, this assumption will not be valid if the order of documents reflects an evolving set of topics (Blei & Lafferty 2006). To overcome this challenge, DTM assumes that data is divided by time slices such as years in the case of 10-K forms. Documents in each time slice are modeled

with a K-component dynamic topic model, where K is the number of time slices, and topics associated with time slice t evolve from the topics associated with time slice $t - 1$.

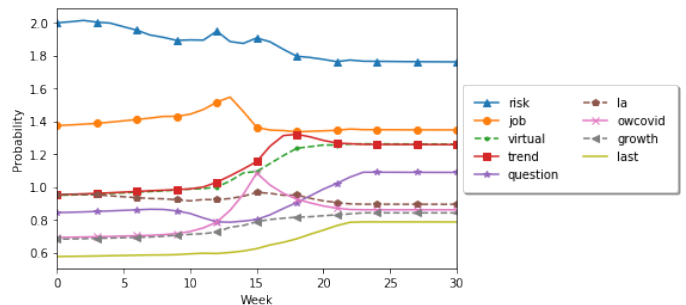
We used Python Gensim, Pandas, and Natural Language Toolkit (NLTK) libraries to train our DTM. A hyperparameter that needs to be determined while training a topic model is the number of topics. To determine the optimal number of topics, we trained several DTM models with the topic number ranging from 5 to 100 topics and measured the clusters' quality using cluster cohesiveness measure built into the Gensim library. Accordingly, the optimal number of topics was determined. It must be noted that increasing the number of topics indefinitely will result in the cohesiveness measure to increase indefinitely and approach a value of one (its maximum value). This phenomenon in machine learning terminology is referred to as overfitting (Blei, Ng, & Jordan 2003). To avoid overfitting, we used a technique called elbow method.

Our dynamic topic modeling analysis has uncovered topics shown in the following figures. We have labeled the topics after qualitatively analyzing the content of tweets that are highly associated with a specific topic by our trained DTM and comparing them against words that represent a topic.

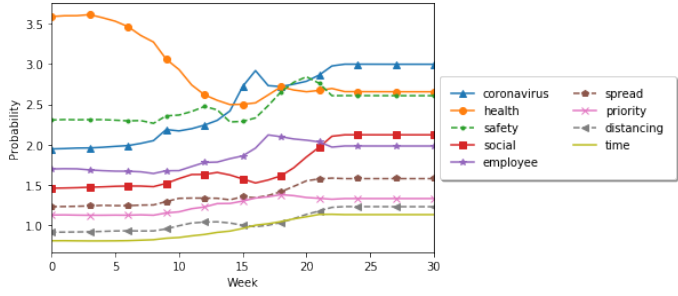
For this preliminary analysis, we have only modeled the tweets related to the pandemic (i.e., they include at least one of the following words: covid, pandemic, coronavirus). Although we have not used it as part of our final statistical analysis, we see an opportunity to study consumer engagement with some of these topics during the crisis.



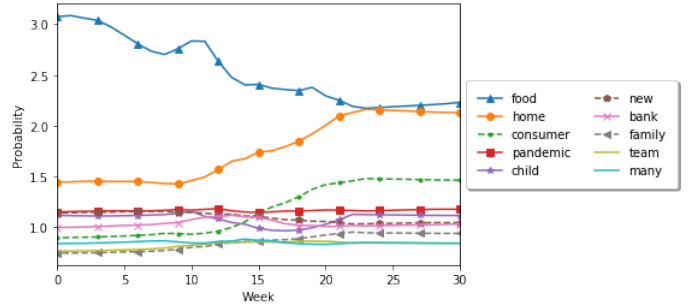
Topic 0: Economic impact of Coronavirus pandemic



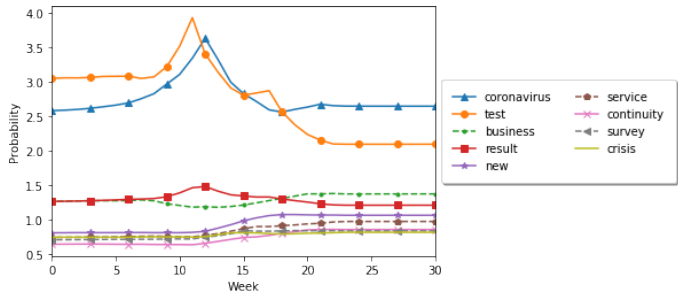
Topic 1: Work during Coronavirus pandemic



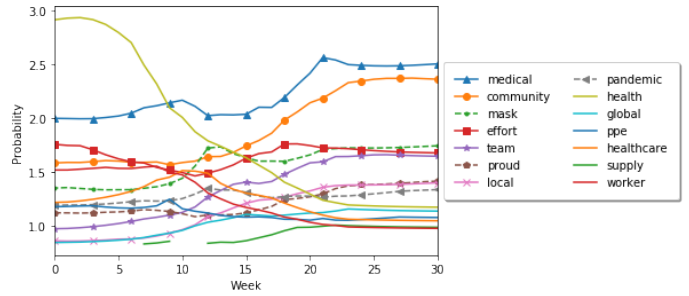
Topic 2: Health & safety instructions



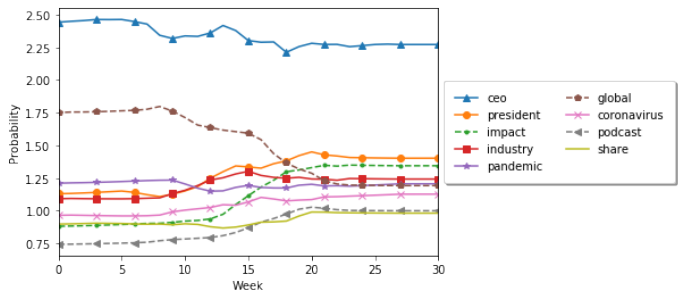
Topic 3: Family concerns Coronavirus pandemic



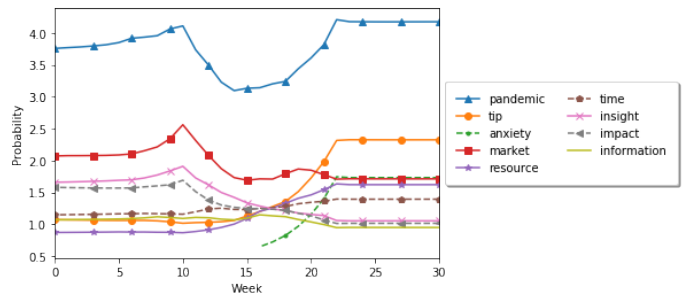
Topic 4: Keeping businesses open



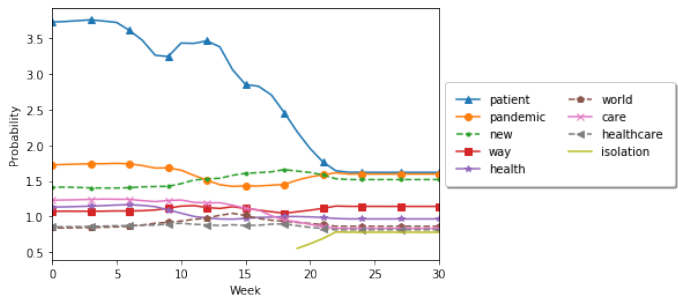
Topic 5: Corporate social responsibility & supporting communities



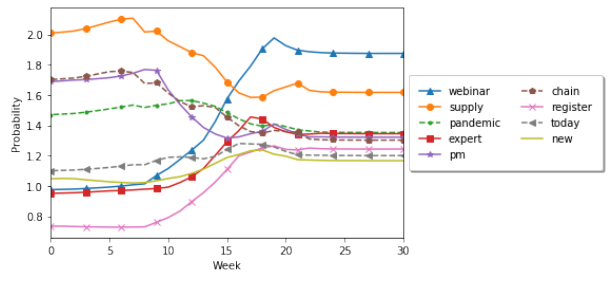
Topic 6: Top management involvement



Topic 7: How to overcome the crisis



Topic 8: New Health Instructions



Topic 9: Virtual meetings

Appendix B.

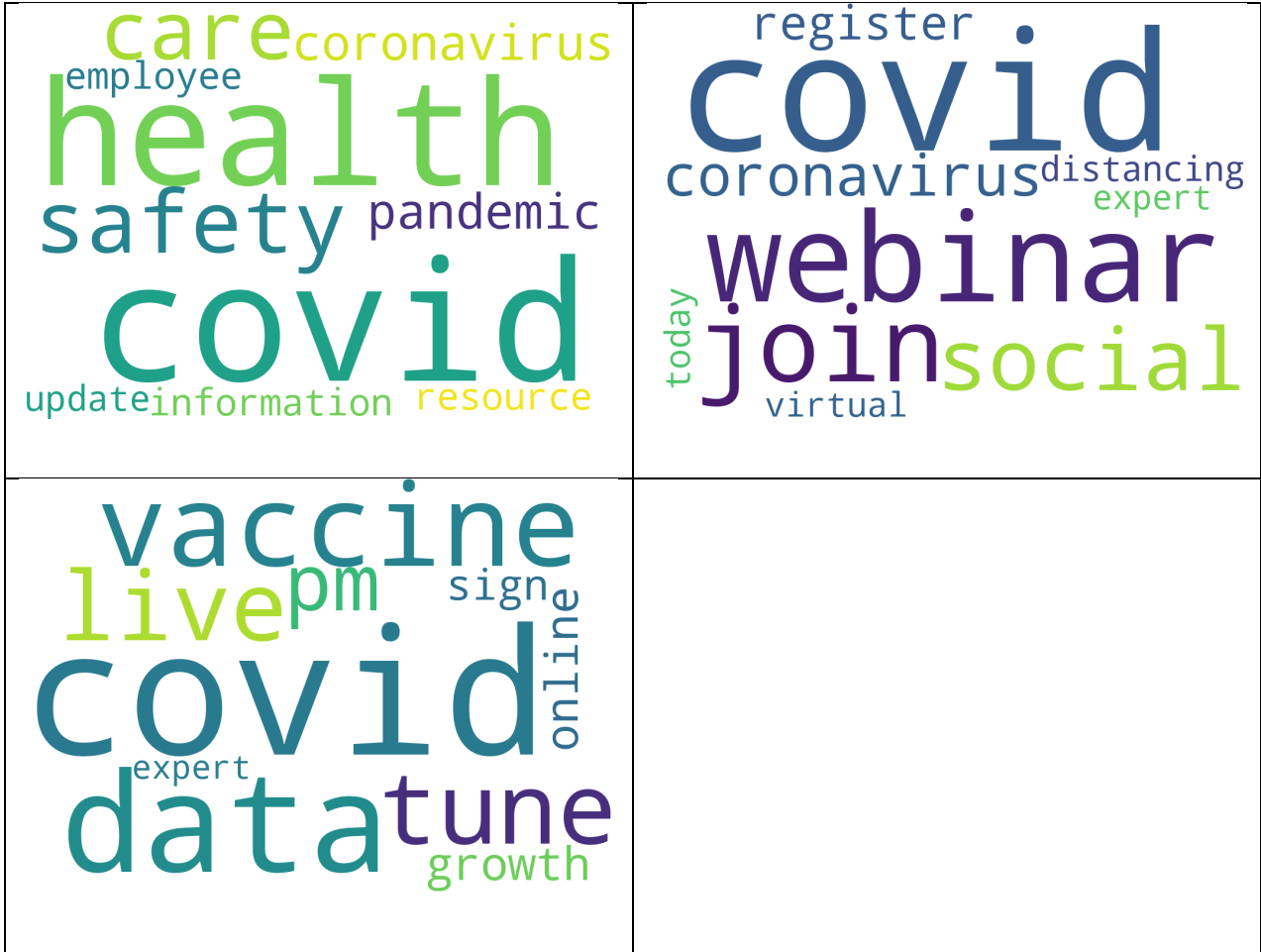
Supplementary Analysis: Modeling Tweets Content Using Static Topic Modeling

Our supplementary analysis of the tweets' content that has the potential to further evaluate consumer's engagement during the time of crisis is done using static topic models. Notably, we used the latent Dirichlet allocation (LDA) topic model to simultaneously discover and quantify the topics in our sample of tweets. LDA was initially developed by Blei et al. (2003) as a natural language processing (NLP) technique with the goal of "find[ing] short descriptions of the members of a collection that enable efficient processing of large collections" (Hannigan et al., 2019). To date, LDA has emerged as the most popular topic modeling technique across various disciplines, including management scholarship (Bao & Datta 2014; Hannigan et al., 2019). The procedure for training an LDA model is identical to what we presented in Appendix A for DTM as DTM is a particular type of LDA model which allows monitoring the evolution of topics over time. The topics we uncovered using the LDA model are presented in the form of word clouds below.

Similar to Appendix A and for this preliminary analysis, we have only modeled the tweets related to the pandemic at this time (i.e., they include at least one of the following words: covid, pandemic, coronavirus).







Appendix C.

Existing Conceptual Frameworks of Consumer Engagement

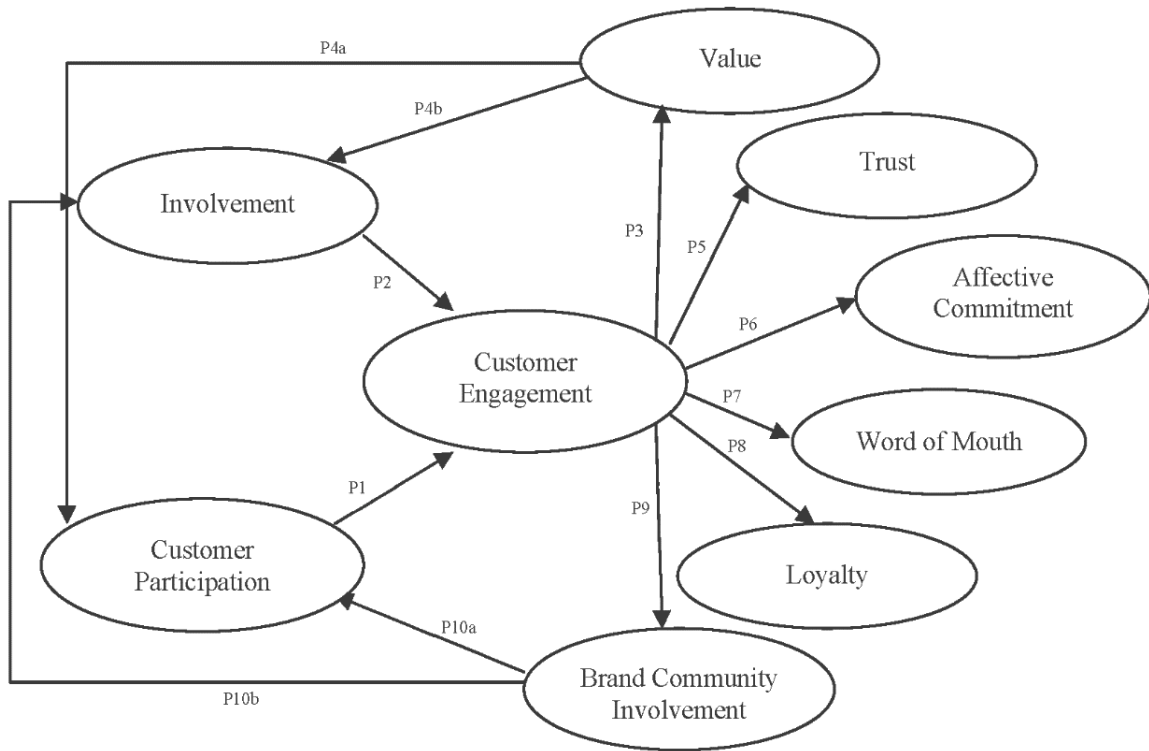


Figure 17: Theoretical Model of Consumer Engagement
reprinted from Vivek et al. (2012)

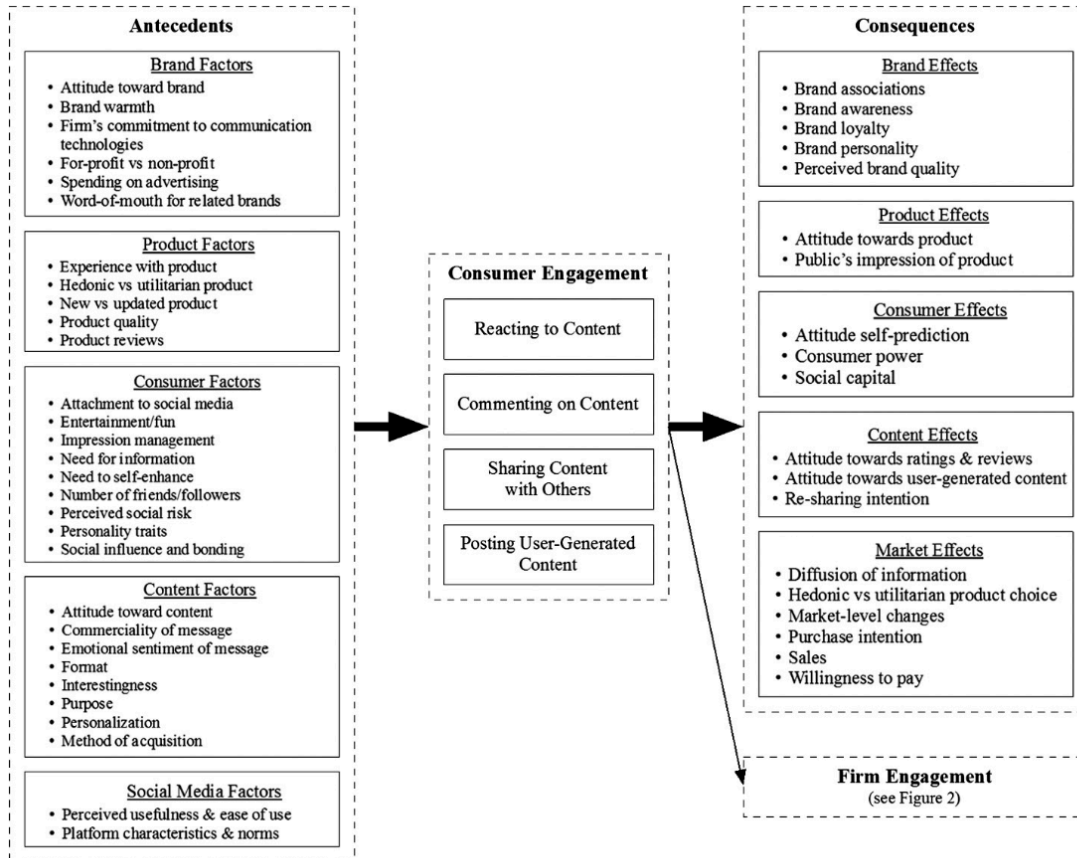


Figure 18: Antecedents and Consequences of CE reprinted from Barger et al. (2016)

Appendix D.

Civic Engagement and Continuum of Engagement Measurement

Civil participation (latent political participation)		Manifest political participation		
Involvement (attention)	Civic engagement (action)	Formal political participation	Activism (extra-parliamentary participation)	
			Legal	Illegal
<i>Individual forms</i>				
Personal interest in politics and societal issues Attentiveness to political issues	Activities based on personal interest in and attention to politics and societal issues	Electoral participation and contact activities	Extra- parliamentary forms of participation: to make once voice heard or to make a difference by individual means (e.g. signing petitions, political consumption)	Politically motivated unlawful acts on an individual basis
<i>Collective forms</i>				
A sense of belonging to a group or a collective with a distinct political profile or agenda Life-style related politics (e.g. identity, clothes, music, food, values)	Voluntary work to improve conditions in the local community, for charity, or to help others (outside the own family and circle of friends)	Organized political participation: membership in conventional political parties, trade unions and organizations	Loosely organized forms or network- based political participation: new social movements, demonstrations, strikes, and protests	Illegal and violent activities and protests: demonstrations, riots, squatting buildings, damaging property, confrontations with the police or political opponents

Figure 19: Typology of Civic Engagement, reprinted from Ekman & Amnå, 2012

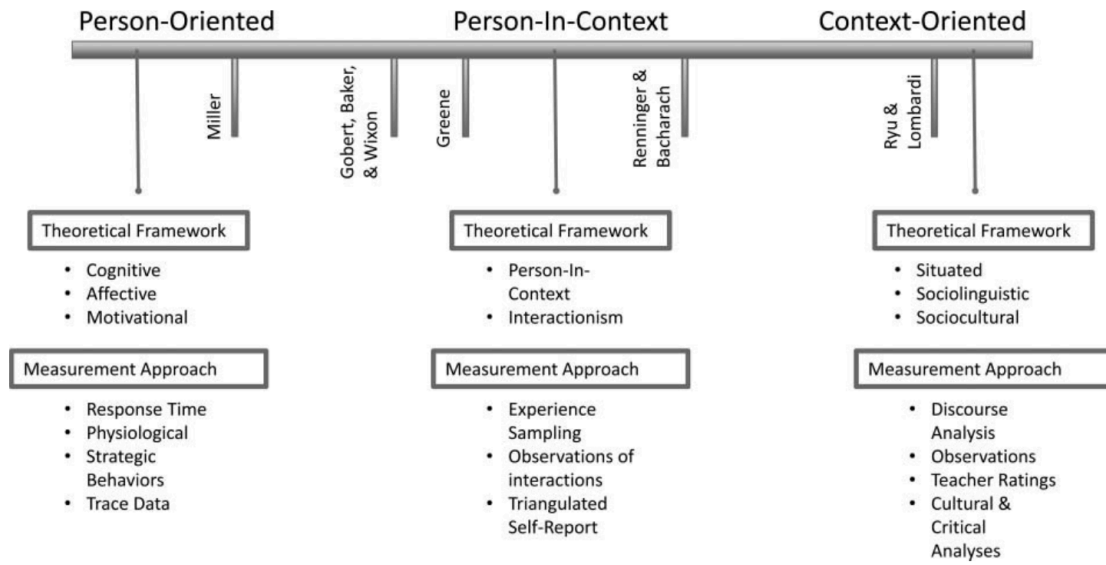


Figure 20: Continuum of Engagement Measurement
reprinted from Sinatra et al. (2015)

Appendix E.

Schwartz Values Theoretical Models

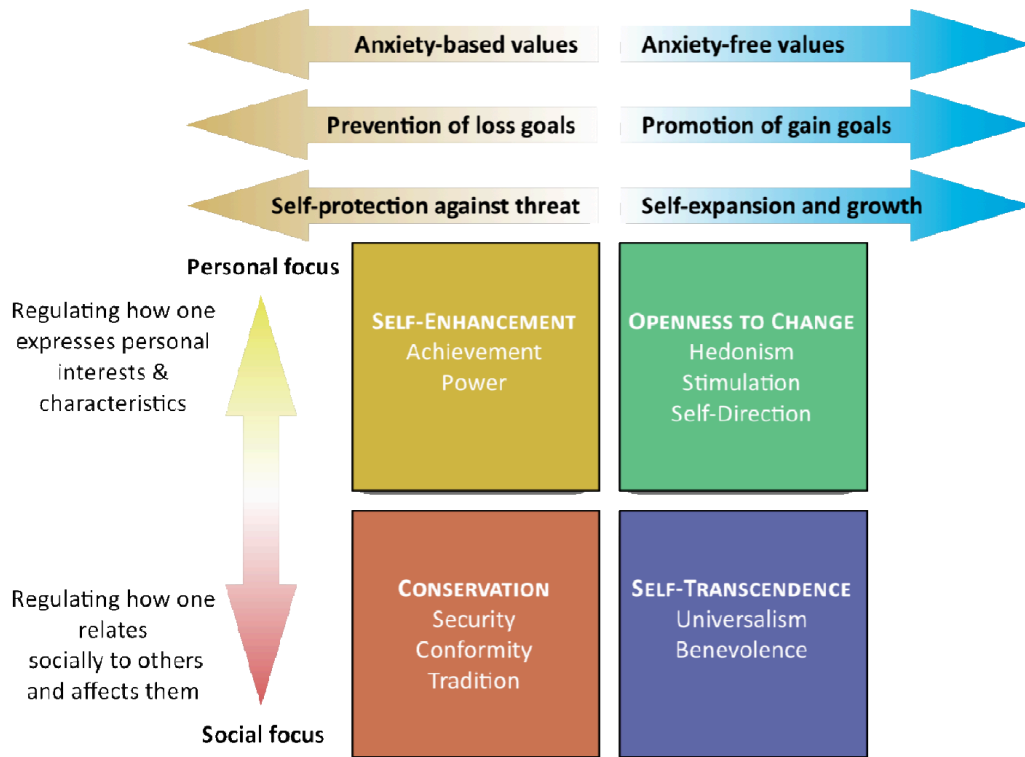


Figure 21.: Basic Human Values: Theory, Measurement, and Application
reprinted from Schwartz (2012)

Appendix F:

Personal Values Dictionary Reprinted from Ponizovskiy et al. (2020)

Value	Words
Self-direction	ability, act, acted, acting, action, actions, activist, activities, activity, acts, aim, analysis, artistic, awareness, backbone, brilliance, brooding, choice, choose, claiming, clever, college, confident, confrontation, contemplation, controversial, controversy, conviction, create, creates, creation, creative, creativity, critically, curious, dash, decision, defiance, determination, determined, develop, devotion, direct, directing, direction, discovery, dispute, disregard, distinctive, education, educational, effort, efforts, enlightenment, evolving, famous, free, freedom, freely, goal, goals, grit, headway, hobby, hunch, idea, ignorance, imagination, inclination, independence, independent, individual, individuality, ingenuity, initiative, insight, inspiration, inspired, inspiring, instinct, intellect, intellectual, intelligence, intelligent, intend, intends, intention, interest, intuition, knowing, knowledge, learn, learned, learning, lessons, logic, mature, meditation, mind, minded, observation, obsessed, obsession, opinion, original, philosophy, plan, pluck, pondering, principles, protest, purpose, rationale, reasoning, reflection, resolve, revolt, scholar, schooling, science, scrutiny, seriousness, skeptical, smart, special, speculation, spirit, talent, talents, think, thinking, thinks, thought, thoughtful, thoughts, undertaking, vanity, vision, willpower, wit
Stimulation	adrenaline, adventure, adventures, amusement, amusing, attempt, attempted, attempting, attempts, audacity, bored, boredom, brave, breakthrough, breathtaking, bustle, challenge, challenged, challenges, challenging, changes, contradiction, courage, coward, curiosity, dare, daring, different, discover, discovered, discoveries, discovering, disturbance, drama, dramatic, dramatically, drive, dynamic, dynamics, eagerness, endeavor, energetic, energies, energy, enthusiasm, enthusiastic, excitement, exciting, exercise, experiences, experiment, exploration, explorer, exploring, extraordinary, extreme, fascinating, fervor, flurry, frenzy, fuss, gamble, glamour, hustle, hysteria, impatience, impulse, innovative, instability, intensity, intensive, interesting, intriguing, invention, inventions, irregular, motivation, movement, mysterious, newer, newest, newly, novel, novelty, opportunities, opportunity, paranoid, passion, passionate, progressive, radical, revolutionary, risk, risks, shock, shocked, spontaneous, stimulated, stimulating, stir, strain, striving, struggle, surprising, surprisingly, temper, temperament, tension, thrill, turmoil, uncertain, uncertainty, unfamiliar, unique, unprecedented, unpredictable, unstable, variety, venture, vitality
Hedonism	allure, appeal, appetite, attraction, celebrations, charm, cheer, cheerful, comedy, comfort, comfortable, compensation, contentment, courting, craving, delicious, delight, delighted, delightful, delights, desire, diversion, ease, ecstasy, elation, enchantment, enjoy, enjoyed, enjoying, enjoyment, enjoys, entertain, entertaining, entertainment, erotic, euphoria, fascination, fetish, flavor, fulfillment, fun, funny, games, glee, gratification, happier, happily, happiness, happy, hilarious, holiday, humor, indulgence, jest, joke, joking, joy, kidding, laughter, leisure, lightness, longing, lure, lust, mirth, optimism, orgasm, party, play, playful, pleasant, pleasing, pleasure, pleasures, recreation, refreshment, rejoicing, relax, relaxation, relish, rest, satisfaction, satisfying, savor, seduction, sensation, sensual, sex, sexual, sexuality, sexually, sexy, sparkle, temptation, thirst, unpleasant, vacation

Value	Words
Achievement	accomplish, accomplished, achieve, achievement, achieving, advance, advancement, advantage, appreciate, appreciation, approval, attained, best, biggest, brains, business, capabilities, capability, capable, capacity, celebrate, champion, compete, competence, competent, competing, competition, competitive, completion, craft, defeat, development, dignity, effective, efficiency, efficient, elegance, employment, experience, expertise, facility, greatest, growth, honors, improvement, improvements, improving, industry, job, jobs, loose, losing, mastery, merit, perfection, perform, popular, pride, productive, professional, progress, promoted, promotion, proud, qualified, quality, readiness, recognize, recognized, recognizes, results, reward, rewards, skill, skills, succeed, succeeded, succeeding, success, successes, successfully, top, training, win, won, work, worth, yield
Power	acquire, agency, aggressive, ahead, attack, authority, award, benefit, bonus, caliber, capital, cash, command, commerce, conquer, conquest, contest, control, controlling, dealing, demand, demands, dominance, dominant, dominate, dominion, earning, earnings, economics, edge, elevation, elite, enforced, enforcement, entitled, expensive, fancy, fight, force, forcing, fortune, gain, gaining, humiliation, income, influence, influential, interests, lead, leadership, luxury, management, manipulation, might, mighty, money, monopoly, ownership, platinum, position, potential, power, powerful, privilege, proceeds, profit, profitable, profits, property, prosperity, purchase, purchases, pursuit, resources, revenue, rich, richest, salary, selfish, spine, standing, status, strength, strengthened, strengths, strong, superior, superiority, supervision, surplus, sway, trade, utility, vantage, victory, wages, weak, weaker, weakness, weaknesses, wealth, wealthy
Security	afraid, alarm, alert, armor, attention, barrier, beware, calculation, calm, calmness, camouflage, careful, catastrophic, caution, cautious, clean, consequences, crisis, custody, damages, danger, dangerous, defend, defending, defense, defenses, defensive, disease, enemies, foresight, guarantee, guard, guardian, guarding, harm, harmless, health, heed, hiding, insurance, menace, neat, order, precautions, preserving, prevent, privacy, prudent, quiet, refuge, retreat, safe, safely, safer, safety, salvation, save, scare, scared, secure, secured, securely, securing, security, shelter, shield, silence, stability, stable, stealth, survival, surviving, threat, threaten, threatened, threatening, threats, tidy, tranquility, trouble, violence, ward, warn, warned, warning
Conformity	abide, accord, accordance, adequately, appropriate, appropriately, authorities, authorization, authorized, avoid, avoided, avoiding, certainty, code, combination, commitment, commitments, committed, committing, compliance, comply, composure, concession, confines, consensus, consent, conservation, conservative, convention, conventional, conventions, courtesy, covenant, credibility, decency, decree, directions, discipline, duties, duty, entity, establishment, etiquette, familiar, fasting, flexibility, forbidden, formally, hesitate, hierarchy, honestly, humble, humility, identity, imposing, improper, inappropriate, instructed, instruction, integrity, law, laws, legal, legislation, legitimate, mainstream, maintaining, measure, modest, modesty, must, obedience, obey, obligated, obligation, obliged, official, orders, organization, outrageous, patience, periodic, permitting, policies, policy, polite, prescription, preserved, procedure, punishment, reason, reasonable, regularly, regulation, regulations, repetitive, required, requirement, reserve, resignation, resolution, respect, respected, respects, restraint, restricted, restrictions, restrictive, reverence, routinely, rule, rules, ruling, served, shame, shyness, similarity, standards, structure, subordinate, suited, system, trust, trusted, unison, violate, violated, warrant, withholding
Tradition	accustomed, allah, almighty, ancestors, ancestry, angel, angels, atheist, awe, belief, believers, bible, bless, blessed, blessing, blessings, brood, catholic, ceremonies,

Value	Words
Benevolence	<p>ceremony, chapel, christ, christianity, christians, church, churches, clan, commandments, congregation, conscience, corrupted, damned, descendants, devil, devout, divinity, ethical, ethics, faith, faithful, folk, folklore, generations, god, grace, habit, habits, heaven, heavenly, heavens, heritage, historical, holiness, holy, honoring, inheritance, innocence, institution, islam, jesus, legacy, marriage, marriages, married, missionary, mohammed, moral, morality, morals, mosque, muhammad, muslim, mystic, myth, origins, orthodox, prayer, praying, preaching, priest, prophet, protestant, providence, purity, qualms, relatives, religion, religions, religious, righteousness, rite, ritual, rituals, sacred, savior, scripture, sermon, sermons, service, siblings, sin, soul, theology, tradition, traditional, traditionally, traditions, virtue, worship</p> <p>acquaintance, advice, affection, aid, ally, assist, assistance, association, backing, belonging, brotherhood, care, caring, closeness, communal, companion, companions, companionship, compassion, compassionate, concern, confidence, contribution, coop, cousin, delicate, dependable, empathy, encourage, encouraged, encouragement, encouraging, families, family, father, feeling, fidelity, fondness, forgive, forgiveness, forgiving, friend, friendly, friends, friendship, generosity, gentle, genuine, gift, goodness, goodwill, grandma, grandmother, grandparents, guidance, help, helpful, helping, honest, hospitality, husband, intimacy, kindly, kindness, love, loyal, loyalty, mom, mother, need, neighborhood, neighbors, nurture, parents, participation, pity, relationship, reliable, rely, responsibilities, responsibility, responsible, sincere, sorrow, support, supporting, supportive, sympathetic, sympathy, tenderness, thanked, treatment, trustworthy, warmth, wife</p>
Universalism	<p>accept, acceptance, acknowledge, acknowledgement, acknowledging, address, aesthetic, agreement, amends, assortment, balance, balancing, beautiful, beautifully, beauty, charitable, climate, coalition, collaboration, communion, communities, community, company, complex, compromise, connection, cooperation, cooperative, coordinated, cruel, culture, decorum, democracy, democratic, democrats, discrimination, diverse, diversity, empowered, environment, environmental, equality, explanation, fair, fairness, fellowship, fusion, generous, graceful, greed, greedy, humanity, injustice, interpretation, justice, liberal, liberation, liberties, liberty, likeness, mankind, meaning, meaningful, mercy, natural, nature, peace, peaceful, protect, protected, protecting, protection, protects, realization, rights, sacrifice, serenity, share, sharing, sincerity, social, socially, society, solidarity, spiritual, tact, tolerance, tolerant, tolerate, tolerated, understand, understanding, unfair, union, united, unity, universal, vulnerable, welcome, welcoming, wisdom, wise, wisely</p>

Appendix G: Daily Average of Values per Tweet Over Time

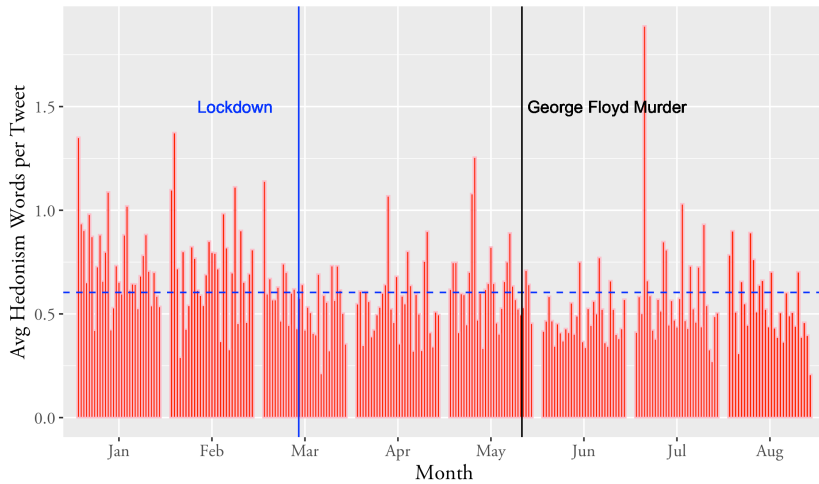


Figure 22: Average hedonism values per on a daily basis tweet over time

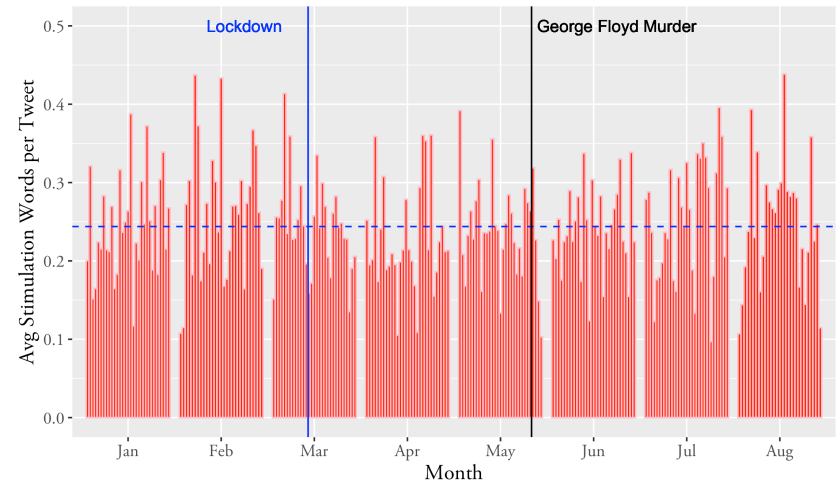


Figure 23: Average stimulation values per tweet on a daily basis over time

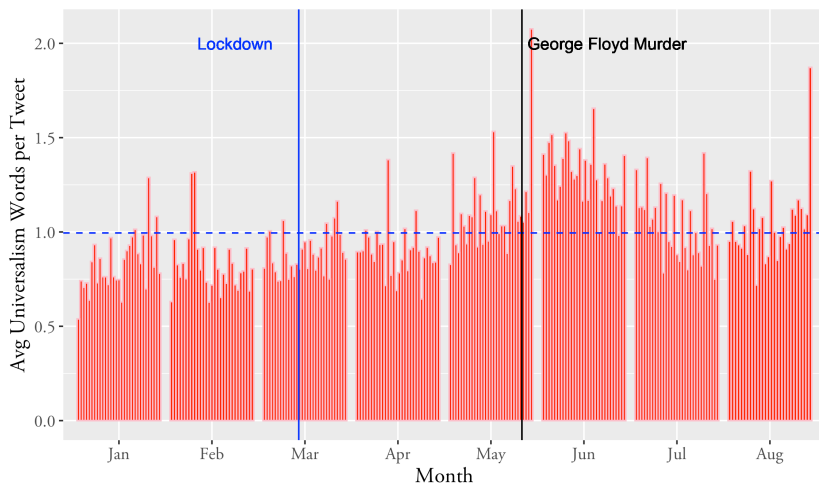


Figure 24: Average universalism values per tweet on a daily basis over time

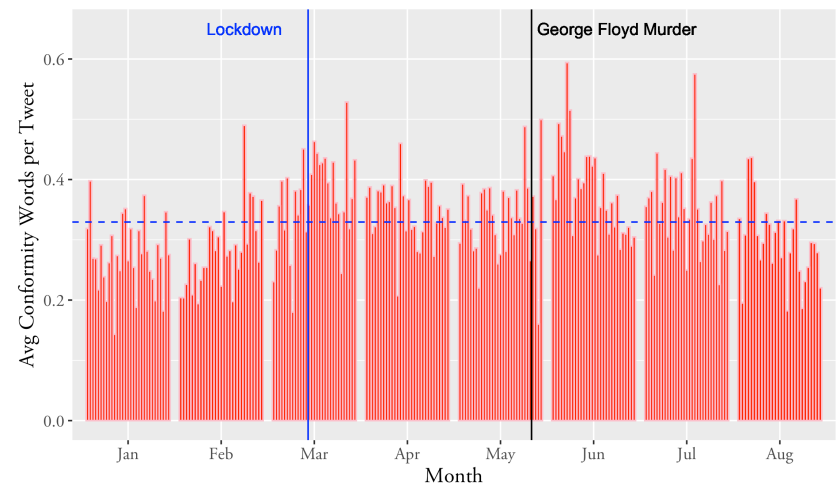


Figure 25: Average conformity values per tweet on a daily basis over time

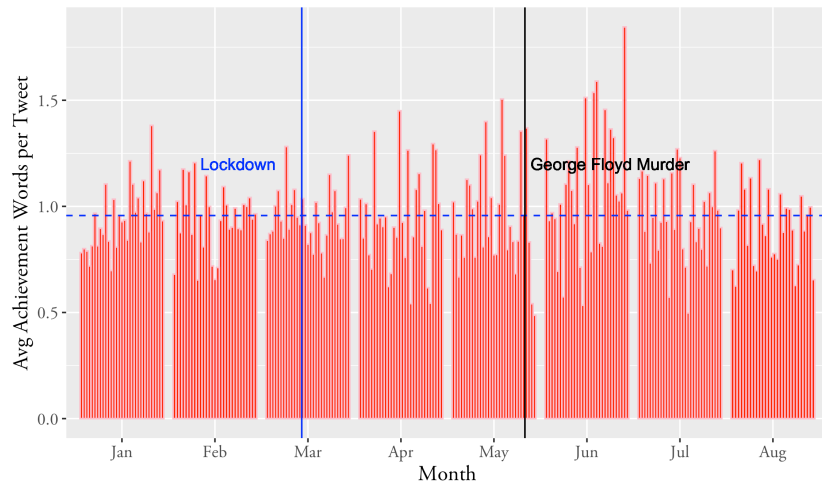


Figure 26: Average achievement values per tweet on a daily basis over time

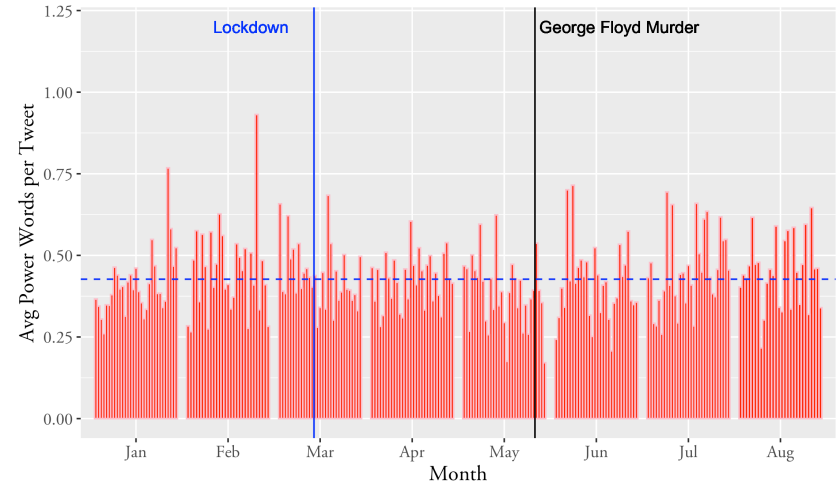


Figure 27: Average power values per tweet on a daily basis over time

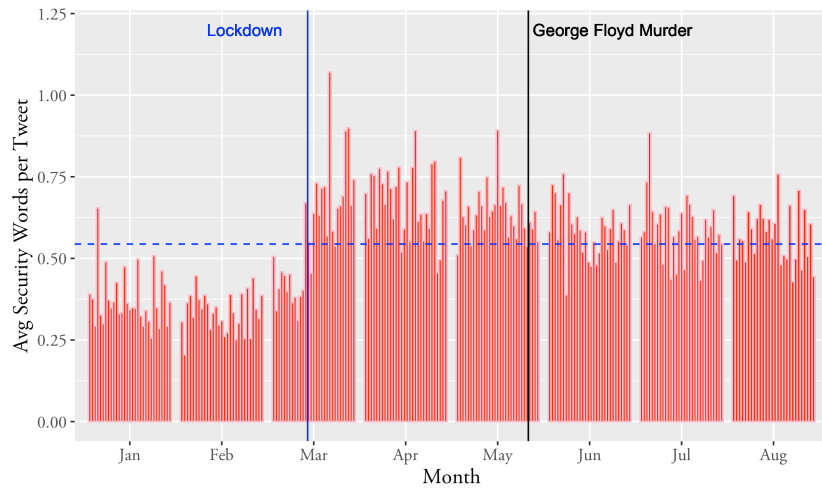


Figure 28: Average security values per tweet on a daily basis over time

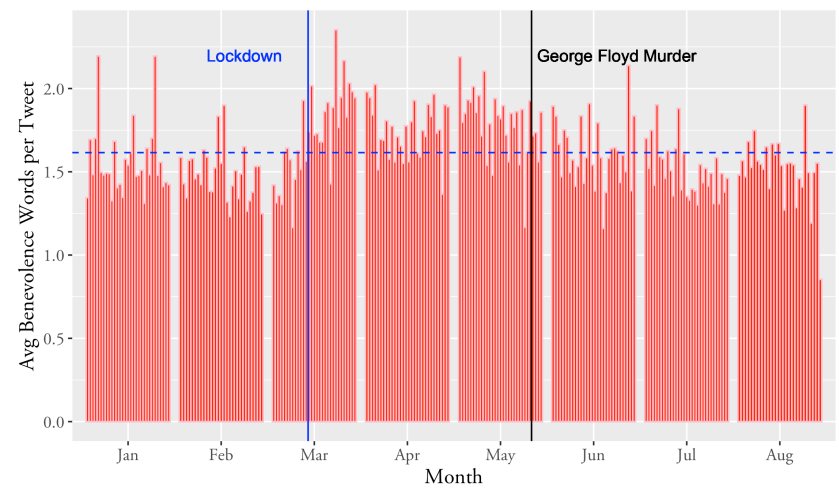


Figure 29: Average benevolence values per tweet on a daily basis over time

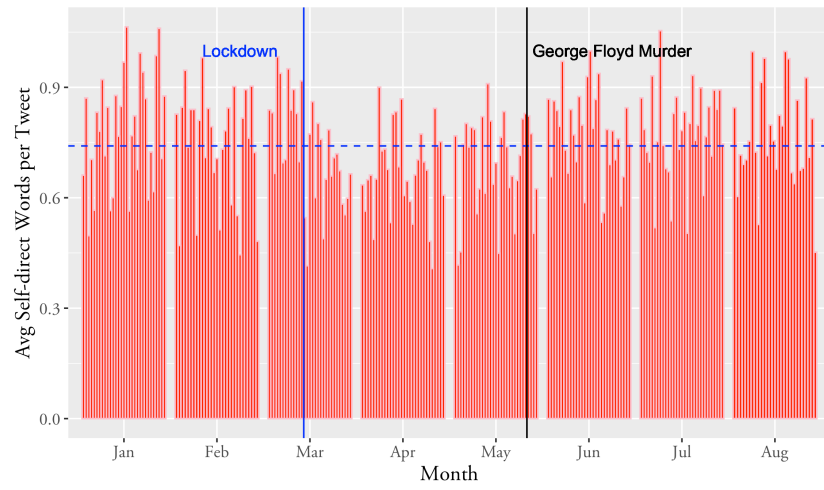


Figure 30: Average self-direction values per tweet on a daily basis over time

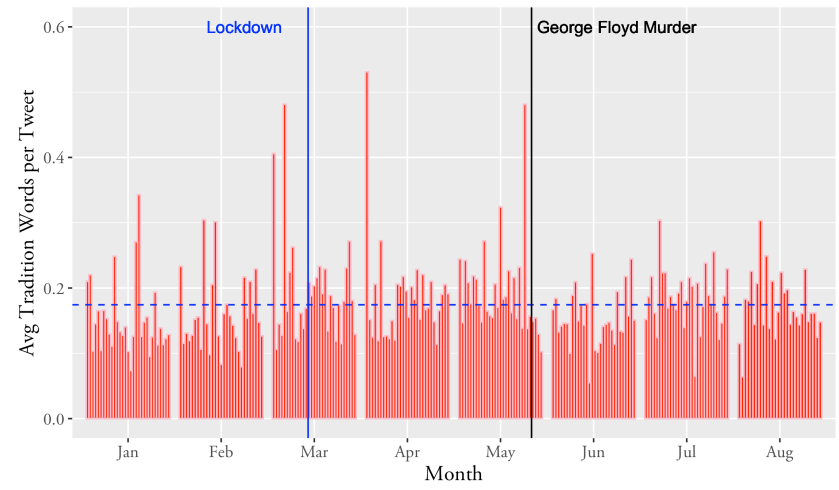


Figure 31: Average tradition values per tweet on a daily basis over time