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CONSUMER ENGAGEMENT WITH BRANDS ON SOCIAL MEDIA: THE MODERATING ROLES OF SELF-QUANTIFICATION AND AWE

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CONSUMER ENGAGEMENT WITH BRANDS ON SOCIAL MEDIA: THE
MODERATING ROLES OF SELF-QUANTIFICATION AND AWE

BY

PETRU DORIN MICU

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
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ABSTRACT

Considering the benefits of consumer-brand engagement on social media, both companies and researchers are interested in finding what factors influence this engagement. Brand engagement antecedents are numerous, yet not fully explored. Thus, the purpose of this dissertation is to examine the effects of self-quantification (defined as one's focus on different metrics, such as number of likes, shares, fitness goals) on consumer brand engagement.

Through a series of four studies, we establish validity for the concept of self-quantification on a brand's social media and examine its role on consumer-brand engagement. The first study shows that self-quantification on social media brand platforms is a distinct concept diverging from the concept of self-quantification on social media as a whole, as well as from other brand engagement antecedents identified in the literature. In addition, we show that higher feelings of empowerment lead to an increased self-quantification tendency, which in turn results in increased levels of brand focus and self-focus. Study 2 further indicates a positive relationship (although not statistically significant) between empowerment and self-quantification. In Study 3, we show that self-quantification leads to higher levels of brand- and self-focus, and offer evidence that self-quantification positively affects brand engagement and behavioral intentions. In Study 4, we examine the role of awe in the relationship between self-quantification and brand engagement. We find that, when self-quantifiers are exposed to awe, they become more focused on their "self" than on the brand, which in turn results in lower brand engagement and behavioral intentions toward the brand.

There is strong support that an effectively instilled sense of self-quantification in customers can help companies in engaging customers with their brands on social media. The dissertation ends with a discussion that highlights the positive and negative aspects of self-quantifiers' engagement with brands, and that offers insights to marketers on how they can improve the return on their efforts to engage self-quantifier consumers on social media.

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CHAPTER 1

INTRODUCTION

Social networking sites have revolutionized modern human communication, enabling users to interact, express, share and create content about anything, including brands. Social media is empowering customers, whose role has shifted from being passive recipients of information to becoming active generators of information (Stewart and Pavlou 2002). Marketers recognize the value of these customer-brand interactions on social media and strive to build engagement through their social media content, without a proper understanding of how this consumer-created content adds value to the brand.

Brand-consumer engagement is an important topic due to the interactive nature of social media. Brand-consumer engagement refers to “the level of a customer’s cognitive, emotional and behavioral investment in specific brand interactions” (Hollebeek, 2011a, p. 565). Many scholars have investigated brand engagement in different contexts, such as the relationships among trust and privacy concerns and consumer engagement with brands’ social media pages (Bitter and Grabner-Kräuter 2013), brand engagement impact on brand awareness, word of mouth and purchase intentions (Hutter, Hautz, Dennhardt and Füller 2013), and consumers’ motivations to engage with brands online (see Muntinga et al. 2011).

Relevant to our research is the research stream investigating engagement with brand in an online community or social network, through creation, distribution and integration of information. Such engagement has been shown to be driven by a strong identification with the group (in which case the individual derives satisfaction from acting in the group’s best interest) or by the peer pressure to act (when the member is

motivated by incentives related to the group membership) (i.e., reputation, rewards, etc.) (De Dreu et al. 2008). In addition, there are several other motivations that determine people to go online, such as entertainment, integration, social interaction, personal identity, and information (Muntinga et al. 2011). Hence, it is difficult for companies to use stimuli that are universally effective in engaging the online community members.

Furthermore, consumers motivated by incentives may appear engaged in the community, but they are, in fact, driven by their focus of behavioral outcomes, and do not meaningfully engage with the community brands. This perspective brings into attention the concept of self-quantification, which may interfere with other motivations that users have for engaging on social media. Self-quantification argues that people may be so focused on tracking different metrics (social media account metrics, fitness goals, weight goals, etc.) that they may lose focus of what drives their engagement on social media. Indeed, Grosser (2014) argues that social media users with a strong focus on metrics have to reimagine both their selves and their friendships in quantitative terms to satisfy their insatiable “desire for more.”

Given that consumers increasingly control the brand narratives, it is important to understand whether and how this phenomenon of self-quantification, which becomes more prolific in our daily routines, affects consumers’ engagement with brands on social media and disrupts the consumers’ narratives.

Thus, this study will explore the following research questions:

- (1) When and how does self-quantification affect brand engagement?
- (2) Will consumers engage with brands on social media when they know that their

“desire for more” will be satisfied, exhibiting a different motivation for engagement than the ones previously discussed in the literature as drives of engaging with brands?

(3) Finally, knowing from the literature that self-quantifiers have a strong focus on their self-performance, what strategies can companies adopt to shift consumers’ focus away from themselves and towards the brand, to help increase brand engagement?

Related to the latter research questions, the focus of this research will be on feelings of awe that have been shown to (1) diminish the sense of self by shifting attention away from individual interests and concerns to integration into social groups (Bai et al. 2017) and (2) increase people’s engagement with content on social media, generating higher message virality (Berger and Milkman 2012).

Research shows that awe leaves people feeling uncertain about the self (Briñol et al. 2018) while admiring something greater than the self, thus inducing feelings of smallness, insignificance, and humbleness (Keltner and Haidt 2003; Valdesolo and Graham 2014), which in turn result in an increased engagement with collectives (Bay et al. 2017). Perhaps brand engagement can be increased if awe is experienced, making people focus more on the community rather than on their longing for more friends, likes, and comments.

By addressing these research questions, this study provides a better understanding of how self-quantification affects brand engagement and offers insights to marketers about ways in which they might intervene to increase brand-focused engagement on social media.

CHAPTER 2

REVIEW OF LITERATURE

Customer brand engagement

The emergence of social media platforms has created a paradigm shift, significantly altering the way in which consumers interact with each other and with brands. Central to this paradigm shift is the concept of customer brand engagement (CBE), which has been defined as a psychological process by which customers move toward being brand loyal (Bowden 2009) and is reflected by the intensity of the emotional, cognitive and intentional states generated by interactive experiences underlying behavioral online interactions (Hollebeek 2011a). Hollebeek (2011a) defines CBE as the level of an individual customer's motivational, brand-related and context-dependent state of mind characterized by a specific level of cognitive, emotional and behavioural activity in direct brand interactions" (p. 790).

According to Hollebeek et al. (2014), emotional CBE is considered to be a customer's degree of positive brand activity-related affect, whereas cognitive CBE refers to his/her level of brand activity-related thought processing and elaboration. Intentional CBE refers to a customer's interest in spending energy, effort and time on a brand activity. Thus, consumer engagement is a multidimensional concept that "plays a central role in the process of relational exchange where other relational concepts are engagement antecedents and/or consequences in iterative engagement processes within the brand community" (Brodie, Ilic, Juric, and Hollebeek 2013, p. 106). The next sections will provide an overview of the literature examining the antecedents and consequences of

consumers' engagement on social media (see Table 1 on page 9 for a review of the antecedents).

Antecedents of consumer engagement

The interest in engaging consumers in brands' social media pages prompted many researchers to investigate the factors that motivate consumers to engage in brands' pages. The literature on consumer engagement identified two types of factors: extrinsic, related to marketer-generated activities meant to increase engagement, and intrinsic, related to consumers' inner motivations and drives to engage with brands.

Intrinsic factors. One approach to understanding people's motivations for using social media is grounded in the uses and gratifications theory (Katz and Foulkes 1962). The theory addresses how individuals choose media that satisfy their needs, allowing them to realize gratifications such as knowledge enhancement, entertainment and relaxation, social interaction and reward or remuneration (Ko et al. 2005) and provides a framework for understanding the motivations of individuals seeking a specific type of content within the social media setting.

A number of other reasons for consumers to engage in brand-related content on social media have been proposed, including entertainment (Azar et al. 2016, Rohm et al. 2013), information acquisition (Azar et al. 2016, Rohm et al. 2013), incentives and promotions (Azar et al. 2016, Schultz and Peltier 2013, Rohm et al. 2013), social influence and bonding (Azar et al. 2016) and impression management (Rohm et al. 2013). In addition, Azar and colleagues (2016) show that customers can be stimulated to engage with brands online through content that allows them to show and/or increase their social popularity. Gambetti and her colleagues (2012) point out that this increased consumer-

brand interaction can be attributed to consumers' need for attention, which can be satisfied by brand-related questions, critics or praises.

Further, Muntinga and colleagues (2011) indicate that the motivations for brand-related social media use may lead to different levels of brand engagement on social media. Specifically, they show that, whereas information-seeking is usually associated with "consuming" content, which is the minimum level of online brand-related activeness, personal identity, entertainment and empowerment are associated with "creating," the ultimate level of online brand-related activeness.

Kang et al. (2014) identify four factors that motivate consumers to engage in social media pages (functional benefits, social/psychological benefits, hedonic benefits, and monetary benefits) and indicate that fan page members are more likely to visit the Facebook fan page of a restaurant when they obtain social-psychological and hedonic benefits from their interactions on the pages. Further, Dimitriu and Guesalaga (2017) find four underlying motivators for consumers' social media brand engagement, including brand tacit engagement, brand exhibiting, brand patronizing, and brand deal seeking. These motivators are used to derive meaningful consumer segments identified as content seekers, observers, deal hunters, hard-core fans, posers and, respectively, patronizers.

Researchers have also considered individual differences and personality traits as predictors of consumer engagement. Blazevic et al. (2014) went a step further and developed a one-factor, eight-item measure called "GOSIP" to ascertain individual differences in propensity to interact with others online. The authors showed a significant correlation between GOSIP, which included psychographic measures (e.g., I like to get involved in online discussions, I enjoy initiating a dialogue online) and the posting

activities of respondents. Relatedly, VanMeter et al. (2015) show that consumer attachment to social media, another intrinsic factor, predicts consumer engagement better than attitude towards social media alone. From a personality traits perspective, Kabadayi and Price (2014) found that extraversion and openness to experience are positively related to consumer engagement, whereas neuroticism is negatively related to consumer engagement. Finally, Eisingerich et al. (2015) show that people's need to self-enhance increases willingness to engage in online word-of-mouth.

Extrinsic factors. Researchers have studied a variety of marketing-generated activities and their relationship with consumer brand engagement. With regard to brand content, Lee and colleagues (2018) found that entertaining content was associated with higher level of engagement (i.e., likes, comments, and shares), whereas informative content, such as mentions of price and deals, was associated with lower levels of engagement. Syrdal (2016) found that higher levels of content authenticity lead to higher levels of engagement. Product authenticity exists as a concept that a consumer believes that a specific product contains the true essence of a brand (Newman & Dhar, 2014). If a user believes that social media content embodies the genuine character of a brand, the content will be perceived as authentic, which leads to higher engagement.

Also related to brand content, de Vries et al. (2012) find that vivid and interactive brand post characteristics (i.e., entertaining posts) enhance the number of likes, while informational content does not show any effects on number of likes and comments. Similarly, Kim et al. (2015) showed that posts with photos were most likely to result in higher engagement (more likes, comments and shares). In addition, they found that

consumers were more likely to engage with task-oriented content (e.g. communicating a sales promotion) than self-oriented (e.g. posting information about the company).

Relatedly, Kwok and Yu (2016) analyze consumers' engagement (number of likes and comments) with Facebook messages from ten restaurant chains and show that the messages with photos and those that include text only received more likes than the "link" messages (containing a URL) and videos (embedding a video). Similarly, entertaining, educational and interesting content spreads much faster on the internet (Liu-Thompkins and Rogerson 2012). Further, Tafesse and Wien (2018) found that transformational message strategy is the most powerful driver of consumer behavioral engagement measured through number of likes and sharing brand posts, while no significant difference is observed between the informational and the interactional message strategies.

Barger and colleagues (2016) identify several extrinsic factors that influence the level of consumer brand engagement, such as product factors, brand factors, and content factors. Notable among the product factors, Schulze et al. (2014) found that hedonic products have a higher chance of being shared among Facebook friends than utilitarian products), and that different sharing mechanisms are more effective depending on whether the product "shared" is utilitarian or hedonic. In addition, a more useful and easy to use social media content triggers a greater intention to engage on that particular platform (Pinho and Soares 2013).

Warmer brands, a nonprofit status, and brands generating positive consumers' attitude produce a more favorable effect on consumers' engagement (Bernritter et al. 2016; Huang et al. 2013), while negative word of mouth related to the brand or even the

traditional advertising lead to more negative effects (Borah and Tellis 2016; Feng and Papatla 2011).

Related to emotional content of the message, research shows that positive content is more viral than negative content, but the relationship between emotion and social transmission is more complex than valence alone. Specifically, content that evokes high-arousal positive (awe) or negative (anger or anxiety) emotions is more viral, whereas content that evokes low-arousal, or deactivating, emotions (e.g., sadness) is less viral (Berger and Milkman 2012). These results hold even when the authors control for how surprising, interesting, or practically useful content is (all of which are positively linked to virality), as well as external drivers of attention (e.g., how prominently content was featured).

Table 1
Overview of the Antecedents of Consumer Brand Engagement Literature

Authors	Concepts affecting engagement	Findings
<i>Intrinsic factors affecting brand engagement</i>		
Ko et al. 2005	Information versus social interaction motivations	Consumers who have high information motivations are more likely to engage in human-message interaction on a Web site, whereas social interaction motivations are more strongly related to human-human interaction.
Azar et al. 2016	Social influence, search for information, entertainment, trust and reward motivations	There are five main motivations that might influence consumers' interactions with a brand on Facebook.
Dimitriu and Guesalaga 2017	Brand tacit engagement, brand exhibiting, brand patronizing, and brand deal seeking.	The analysis reveals four underlying motivators for consumers' social media behaviors, which are used to derive consumer segments identified as content seekers, observers, deal hunters, hard-core fans, posers and, respectively, patronizers.

Eisingerich et al. 2015	Need to self-enhance	People are less willing to engage in word-of-mouth on social media than in person because of the higher perceived social risk associated with online sharing. However, this risk is moderated by need to self-enhance, which increases willingness to engage in online word-of-mouth.
Rohm et al. 2013	Entertainment, identification with or connection to the brand, timeliness of inform; service responses, product information, and incentives and promotions	Brand-consumer interactions driven by social media can be characterized by five primary motivations or themes.
Schultz and Peltier 2013	Sales promotions motivations	The majority of social media marketing initiatives take the form of communicating sales promotions to already engaged consumers.
Muntinga et al 2011	Information, personal identity, integration & social interaction, entertainment, empowerment, and remuneration	The authors proposed a COBRA typology to understand people's motivations to engage in brand-related social media.
Kang et al. 2014	Functional, social/psychological, hedonic, and monetary benefits	There are four factors that motivate consumers to engage in social media pages.
Blazevic et al. 2014	Personality traits	They conceptualize an individual difference trait termed GOSIP which measures an individual's predisposition to interact online and show that GOSIP affects online engagement and participation.
Kabadayi and Price 2014	Extroversion and openness to experience	Extroversion and openness to experience are positively related to consumer engagement, whereas neuroticism is negatively related to consumer engagement.
VanMeter et al. 2015	Consumer attachment to social media	They developed an 8-factor, 27-item measure of consumer attachment to social media ("ASM") and showed that ASM predicts consumer engagement better than attitude toward social media alone.

<i>Extrinsic factors affecting brand engagement</i>		
Kwok and Yu 2013	Message content (photo and text only versus URL and video)	Photo and status (text only) messages posted by a restaurant generated higher engagement than videos and link messages (that included an URL)
Tafesse and Wien 2017	Transformational, informational, and interactional message	Transformational message strategy is the most powerful driver of consumer behavioral engagement, while no significant difference is observed between the informational and the interactional message strategies.
Syrdal 2016	Content authenticity	Higher levels of brand attachment and content authenticity lead to higher levels of engagement
Lee et al. 2018	Entertaining versus informative content	Entertaining content was associated with higher level of engagement (i.e., likes, comments, and shares), whereas informative content, such as mentions of price and deals, was associated with lower levels of engagement.
de Vries et al. 2012	Vivid and interactive content	Vivid and interactive brand post characteristics (i.e., entertaining posts) enhance the number of likes, while informational content does not show any effects on number of likes and comments.
Liu-Thompkins and Rogerson 2012	Entertaining and educational content	Entertainment and educational values affect diffusion but production quality does not matter.
Schulze et al. 2014	Sharing mechanism for utilitarian versus hedonic products	Whereas unsolicited and incentivized broadcast messages from friends are very successful sharing and engaging mechanisms for hedonic products, they are the least effective for utilitarian products, for which solicited viral marketing messages that customers can either direct at individual friends or broadcast to strangers are more effective.

Pinho and Soares 2013	Useful and easy to use content	A more useful and easy to use social media content triggers a greater intention to engage on that particular platform
Berger and Milkman 2012	Emotional content (awe versus anger/ anxiety)	Positive content is more viral than negative content. In addition, virality is partially driven by physiological arousal. Content that evokes high-arousal positive (awe) or negative (anger or anxiety) emotions is more viral. Content that evokes low-arousal, or deactivating, emotions (e.g., sadness) is less viral.
Kim et al. 2015	Posts with photos	Posts with photos were most likely to result in higher engagement (more likes, comments and shares).

Consequences of consumer engagement

A vast research stream focusing on understanding the effects on engagement has shown several brand benefits of engagement: a more positive reaction toward consumption (Yuksel et al. 2016), more commitment and loyalty toward the brand (Hamilton et al. 2016; Jahn and Kunz 2012), more emotional attachment to the brand (Dholakia and Durham 2010), more positive attitudes toward the brand (Sun et al. 2006; Wang et al. 2012), more brand awareness (Blakley 2013), and an increase in willingness to recommend and purchase the brand (Lee and Youn 2009, Liu 2006, Mudambi and Schuff 2010).

Other scholars have shown that higher levels of consumer-brand engagement lead to direct economic benefits for companies, such as consumers contributing to product development, larger sales, smaller costs, and overall increased profitability (Bijmolt et al. 2010; Sawhney, Verona, & Prandelli 2005). In addition, in a variety of online domains, engagement has been shown to lead to a positive brand experience in online banking (Khan et al. 2016), and brand preference and brand purchasing in automotive, beverage

or telecommunication industries (Gambetti et al. 2012). Dolan et al. (2016) highlight that online engagement between consumers and brands is critical for brand success, and point out that social media content is the main engine driving the online behavior responsible for this engagement. Interestingly, Dolan and colleagues point out that online consumers don't have to be "active" in order to create brand equity for the firm. Instead, companies can generate a higher level of consumer-brand engagement by simply providing gratification through the online content they offer.

The focal brand engagement consequence in this research is behavioral intention. Previous meta-analyses of intention– behavior relations integrated findings from correlational studies (e.g., Armitage and Conner 2001, Godin and Kok 1996, Randall and Wolff 1994, Sheppard et al. 1988, Sheeran 2002, Webb and Sheeran 2006), and showed that intentions have strong associations with behavior.

Although consumers' engagement with brands in a digital environment, as well as its antecedents and consequences, have been studied extensively in the literature in the recent years, a better understanding of the concept is necessary given that engagement is recognized in the industry as a key factor used to measure online marketing success. Specifically, the new phenomenon of self-quantification involving an extensive focus on quantifying one's own behavior (which on social media it is reflected on a focus on the number of likes, comments, and shares a post has, and the number of friends and followers of one's account (Grosser 2014)) may shift social media users' focus from brands to their own performance. Hence, it could affect the way in which consumers interact with brands in that environment.

Quantification of self

In 2020, there were about two social media accounts for each human on the planet (Statista), with an average social media user having an impressive 8.8 accounts on different platform - a more than 80% increase from 4.8 accounts in 2014 (Dean 2021). The proliferation of social media has created radical changes in the way in which consumers interact with brands. They invest important resources such as time, money, energy, etc., in the form of brand-related thoughts, feelings, and actions (Brodie et al. 2013; Hollebeek 2011a) when engaging with brands on social media. As interactivity is a critical source of consumer brand engagement (Fang 2017), much research focuses on motivations to customer–brand interactions. We extend that research by focusing on a different motivation that has not been previously studied in the social media context, that is, self-quantification.

Given that social media has provided its users with a variety of tools to monitor how their accounts change every day, and how they compare with other accounts on the same platform with regard to the number friends, followers, likes and shares of comments, etc., it has created a strong focus on quantification (Grosser 2014). This allowed users who normally had to use various gadgets to monitor and record specific aspects of their personal life (Lupton 2016) to gain easy access to a new array of data that represented their self; thus taking the predominantly offline self-quantification phenomenon into the online environment.

Most of the existing research has investigated the self-quantification process as it applies to health or body-related information, voluntarily tracked by subjects (Lupton 2012; Sharon 2017; Wang et al. 2016). The most common tracking devices are fitness

trackers and smart watches, but the market is seeing an increased presence of niche health and diet monitoring devices, from smart contact lenses able to constantly monitor the wearer's blood glucose (Park et al. 2018), to augmented eye glasses capable of quantifying the characteristics of the user's surroundings (Engelhard et al. 2020). With the introduction of such devices, tracking of personal data became extremely facile and accessible to everyone. Such tracking of personal data became known in literature as quantification of self (Lupton 2013) and gave rise to the quantified-self (QS) movement (see Swan 2009).

This self-quantification phenomenon is not reduced to just a few dedicated sites for self-quantifiers of health-related information, like “Quantified Self,” “Quantified Mind,” “MyFitnessPal,” or “PatientsLikeMe,” but may exist on every site that allows its users to see numerical characteristics of their accounts. Specifically, it may exist on social media sites, such as Facebook, Instagram, or Twitter, where users can observe at any point different metrics, such as number of likes, friends, followers, comments, posts, and so on.

The explicit motto of the QS movement is “self-knowledge through numbers.” Collecting data about oneself using digital devices, such as such as logs, geo-maps, statistical summaries, and visualization to facilitate self-tracking, is an important route to understanding one's body and oneself (Ruckenstein 2014) and motivates individuals towards the attainment of desirable goals (Hamari et al. 2018; Lupton 2016; Swan 2009, 2013). An interesting aspect of self-quantification is that it is not limited to data measurable by wearable technology, but it includes data about the extended self – anything that a person legally or psychologically owns. For example, some people may

be very careful to record the mileage of their car at every single maintenance event (like changing oil, tire, washing, etc.), or other may closely monitor their social media accounts for the number of likes, shares, comments, and so on.

To better understand the self-quantification phenomenon, we can observe salespeople's goal-oriented behavior in the entire sales-related environments, from giant international retailers to the door-to-door salesman. Whenever the salespeople try to achieve their objectives, they engage in either learning or proving goal oriented behavior (Elliot 1999; VandeWalle 1997).

While learning goal orientation means focusing on personal improvements (Elliot and Dweck 1988), proving goal orientation means focusing on appearance improvements (Elliot 1999). Similar to the salespersons governed by a proving goal orientation, self-quantifiers focus on looking competent to other online users and gaining favorable opinions from them (Chai et al. 2012). This behavior can make them deviate from their main goal (i.e., complete a sale, or enjoy the online experience) and focus on their secondary goal, such as satisfying and pleasing the customer, or increasing their online posts' metrics (Oliver and Anderson 1994). In the case of self-quantifiers acting in an online brand community, the extensive focus on their account metrics can result in ignoring the brand and the community altogether.

The account-related metrics are perceived by many social media users as their personal worth (Grosser 2014), fueling a natural "desire for more:" more likes, more comments, more shares, and more friends and followers (Grosser 2014). One main criticism of self-tracking has been that it promotes extreme forms of healthism and individualism (Sharon 2017) and compels social media users to reimagine both self and

friendship in quantitative terms. As Choe and colleagues (2014) point out in their research, one of the main reasons behind self-quantification is the users' need for achievement, or the desire to improve their life aspects. Nostalgia, natural curiosity, and data interest are other reasons for self-quantification identified by Maltseva and Lutz (2017).

The excessive focus on numerical data contributes to a reductionist understandings of selfhood by distancing people from their "true" self (Sharon 2017). Moreover, the users are encouraged to participate in a "net of surveillance" (Lupton 2012), by turning their gaze upon themselves and inviting peers to share their self-tracking data on social media and other digital platform. Thus, people may lose sight of their actual self-tracking goal, being more concerned about expressing their selves via self-tracking data. Indeed, by removing the metrics from Facebook's interface using a software program called Facebook Demetricator, and inviting the users to try the system without the numbers, Grosser (2014) shows how dependent some users are on quantification. Such a strong focus of self-quantifiers on the self and the metrics may undermine their desire to engage with brands on social media or may disrupt their engagement in a way that does not yield favorable outcomes for the brand.

Thus, the one of the foci of this dissertation is to understand how self-quantification affects brand engagement. While self-quantification has been studied before to a large extent as related to wearable technology (Etkin 2016; Maltseva and Lutz 2018; Pettinico and Milne 2017) and a lesser extent in the context of social media (Grosser 2014; Wang et al. 2016), we believe this is the first study that explores the

effects of self-quantification (as a focus on social media metrics such as number of likes, shares, comments, etc.) on consumers' engagement with brands.

Self-Quantification vs. Self-Monitoring

Because of the context in which self-quantification is examined, that is, social media where people's activities are visible to other social media users, it is important to make a distinction between the concept of self-quantifying and that of self-monitoring. Self-monitoring intends to explain human behavior (under the form of self-observations and self-control actions) as a response to social appropriateness (Snyder 1974). According to Snyder (1987) "at the core of the self-monitoring formulation is the proposition that individuals can and do exercise control over their expressive behavior, self-presentation, and nonverbal displays of affect" (p. 86).

High self-monitors intend to change their natural emotional response to a stimulus into one that is generally accepted as being appropriate for that particular situation and their social selves to present a more positive self-image in order to gain social approval. They intend to mask an inappropriate emotion or lack of, and portray either as unresponsive, or as experiencing an appropriate emotion (Snyder, 1974). In contrast, low self-monitors do not have the motivation or ability to attend to environmental and behavioral cues to shape their social selves to meet the demands of a situation. They express important and enduring beliefs, attitudes, and behaviors regardless of situational pressures.

When self-monitoring people doubt the appropriateness of their emotional reactions, they tend to rely on surrounding people's behavior for tuning theirs (Schachter and Singer, 1962). This process is more accentuated in situations where consistent indications for social appropriateness exist, such as watching an event with a group of

friends, than in situations where there are no cues for social appropriateness, such as watching the event alone (Snyder 1974). Self-monitoring people are highly concerned about social appropriateness, thus study other persons' expressions and self-presentations in certain situations, and use those as guidelines for their own behavior.

Previous research on self-monitoring and need for approval shows controversial results. Crowne and Marlowe (1964) report a high correlation between the two concepts in a variety of situations, while Bem (1972) suggests that this relationship is more limited to social approval instances. Further, research in the realm of consumer behavior indicates that high self-monitors are more persuaded by advertising messages and product information that emphasize the image one could project through the ownership of a product and its use, whereas low self-monitors were particularly sensitive to advertising messages that emphasized the quality and function of the product (DeBono and Packer 1991; Shavitt, Lowrey, and Han 1992; Snyder and DeBono 1985). In addition, DeBono and his colleagues (DeBono and Rubin 1995; DeBono et al. 2003) show that high self-monitors evaluate a product based upon its image-enhancing properties (e.g., the product's country of origin or celebrity endorsement), whereas low self-monitors make evaluations based on product's performance. Thus, high self-monitors focus on a product's ability to project a desirable image when making product choices, whereas low self-monitors find the product's performance to be more important (see DeBono 2000).

In a more recent study, Harnish and Bridges (2016) show that high (vs. low) self-monitors are more likely post "haul videos" on YouTube, which are short videos in which young women not only present their fashion and beauty purchases, but express their evaluations and opinions. Due to high self-monitors' high level of sensitivity to

surrounding social cues and use of these cues to monitor behavior, self-monitoring is especially appropriate to consider in a social media context, where people engage in visible, virtual self-presentation. Although self-monitoring and self-quantification seem to be closely interrelated, as they both imply a desire to gain social approval, the outcomes sought by self-monitors and self-quantifiers are different.

Whereas self-quantifiers are looking to gain favorable opinions from others by having high focus on numbers, and is measured with items such as “I regularly monitor the numbers related to my SM account (i.e., likes, comments, shares)” (Li et al. 2010), self-monitors are focused on presenting a more positive self-image and is measured with "I would probably make a good actor" or other items that indicate a person’s desire to modify his/her behavior to please others (Gangestad and Snyder 2000). To the best of our knowledge, this is the first study to examine the effect of self-quantification on social media engagement. We argue that the motivations that drive the self-quantifiers’ desire for higher-level metrics may interfere with consumers’ motivations to engage with brands on social media, making self-quantifiers less engaged with brands (or engaged for the “wrong” reasons).

Low engagement with online brands as a result of users’ intense focus on their selves is detrimental to the companies; thus it is for marketers to understand how to shift focus to the brand to increase engagement. One factor has been identified in the literature as an effective way to diminish the sense of self by shifting attention away from individual interests and concerns to integration into social groups (Bai et al. 2017), as well as to increase people’s engagement with content on social media, generating higher

message virality (Berger and Milkman 2012). It is the feeling of awe, which will be discussed next.

Awe

In general, awe can be associated with witnessing a threatening experience, personal or natural beauty, someone's ability or virtue, or a supernatural phenomenon (Keltner and Haidt 2003). More recently, we see awe defined as an emotion associated with positive feelings (Rudd et al. 2012), producing a pleasantry that those who experience it do not want to end (Shiota et al. 2007), and that leaves people feeling uncertain about the self (Briñol et al. 2018). This uncertainty result from admiring something greater than the self, and induces feelings of smallness, insignificance, and humbleness (Keltner and Haidt 2003; Valdesolo and Graham 2014), which in turn result in an increase engagement with collectives (Bay et al. 2017).

Research on social media indicates that awe can change people's engagement with social media content. Specifically, Wang et al. (2018) found that non-hub users (i.e., individuals that have a low number of ties to other people on social media) can have a particularly powerful effect on generating reposts by their followers when the emotional content of the posts includes awe. Furthermore, Berger and Milkman (2012) find that messages that contain a high-arousal emotion of awe are more viral than other, lower-arousal emotional messages. These results hold even when the authors control for how surprising, interesting, or practically useful content is (all of which are positively linked to virality), as well as external drivers of attention (e.g., how prominently content was featured).

Based on these findings, we expect awe to overtake the effects of self-quantification on focus on brand versus self, given that the feelings of awe are associated with a shift from focusing on self to focusing on the community.

Empowerment

The literature on the off-line self-quantification implies that people engage in this behavior in order to make better decisions about themselves (Lupton 2013; Nutbeam 1998, 2008). Relying on the data from self-tracking devices makes patients feeling more empowered when talking about their medical situation with physicians by switching their role from pure patient to more of a partner or collaborator with the health care provider (Swan 2009). Furthermore, the simple use of self-tracking technologies induces feelings of empowerment in consumers monitoring their health conditions (Sharon 2017).

Empowerment is a psychological state leading individuals to believe they have control of their own lives, and can have an impact in their communities (Berger and Neuhaus 1977; Katz 1984; Zimmerman and Rappaport 1988). In the context of social media, the empowerment motivation refers to people using social media to exert their influence or power on other people or companies. Menon (1999) defines psychological empowerment as “a cognitive state characterized by a sense of perceived control, competence, and goal internalization” (pp. 161-162). Diener and Biswas-Diener (2005) also highlight the fact that empowerment is not limited to the actual capability to complete a task or control one’s environment, but also represents the perception that has the ability to do so.

People in a state of empowerment experience higher self-efficacy, more initiative, increased effort toward a task, and higher persistence when faced with obstacles

(Bandura 1977), higher perceived competence and control (Menon 1999, Thomas and Velthouse 1990, White 1959) and overall a greater perception of power (Thomas and Velthouse 1990). Moreover, customers empowered by brands in product selection or design process show an increased purchase intention, willingness to pay, and psychological ownership for the brand (Fuchs et al. 2010).

In the social media environment, Muntinga et al. (2011) found that an empowerment motivation drove the highest level of brand activeness, as users engaged in creating messages about brands. Our research will build on these findings from the empowerment literature to investigate how self-quantification affects the relationship between empowerment and brand engagement.

The access and use of the social media online environment requires users to possess a minimum of technological knowledge and familiarity with technical devices. When the integration between humans and technology is not perfect, discomfort, stress, and even disempowerment may occur (Freund 2004, pp 273). Since social media is used by more than half of the world's population, with a daily average of 2 hours and 25 minutes (Chaffey 2021), and with users reporting addiction toward it (Davis 2012) it is natural to believe that people would want to avoid the negative feeling caused by unfamiliarity with this electronic environment, and aim to master its usage. Thus some users may try to avoid experiencing online discomfort, stress, and, more importantly, disempowerment by signaling that they master the use of a social media platform.

Research gap

As discussed above, consumer brand engagement has been investigated extensively in the recent years. However, given that engagement is recognized in the

industry as a key factor with which to measure online marketing success, a better understanding of its antecedents, in particular with regard to the intrinsic factors that could affect consumers' engagement with brands on social media, is needed. The focus of this research is on a factor that results from the technological climate change related to the power and portability of the electronic devices used to access the online environments, which has led to major changes in consumer behavior. In addition to people checking their phones constantly, one moment paying attention to the real world just to be immersed in the digital one in the next, they also have access to a variety of ways to "self-quantify" their behavior. They can see and compare the number of likes a comment has gathered, the number of friends or followers they have on their accounts, or how many times one of their posts was shared (Grosser 2014). This leads to an effect of self-quantification, in which metrics activate the "desire for more," driving users to want more "likes," more comments, and more friends.

It is not clear from prior research how a focus on quantifying one's behavior and the need to reimagine one's personal worth through metrics and "desire for more" (Grosser 2014) affect consumers' levels of engagement with social media. Whereas previous research identified some personality traits, such as people's extroversion and need for self-enhancement (Eisingerich et al. 2015, Kabadayi and Price 2014), as antecedents of engagement, scholars have yet to consider other antecedents, such as self-quantification, which have not been studied in the CBE literature previously. In addition, this research investigates how people's focus on quantifying the self on social media is affected by feelings of empowerment (another antecedent of and brand engagement) on brand-specific social media sites.

Furthermore, to explore online consumer engagement, an understanding of the extrinsic factors is also necessary. Marketers need to know not only how user-related factors affect their engagement with brands, but what marketer-generated activities can increase that engagement. Thus, a secondary focus of this study will be on ways in which companies can increase people's level of engagement with brands on social media, overcoming the users' focus on quantifications of self.

Because self-quantification is characterized, as the name says, on the "self," the current study specifically looks at an extrinsic factor that can draw people's attention away from the self and towards the brand: feeling of awe. Although awe has been previously examined in the context of social media engagement, there is a scarcity of research involving this emotion on social media and it has never been studied in the context of self-quantification.

The effect of empowerment on self-quantification

Grosser (2014) showed that self-quantifiers express a desire for more and more data. Since consumers with more data may feel empowered in their decision choices (Seçkin 2011), we speculate that self-quantifiers desire empowerment.

The complexity and numerosity of social media platform may intimidate online users. One way of displaying competence and control on these platforms is to possess an online account that stands out from the rest by displaying "perfect" social media account metrics, such as number of posts, likes, fans, and followers. These metrics are more important for high (versus low) self-quantifiers, thus they more likely to be preoccupied by demonstrating online competence and control, which are in fact the main traits of empowerment.

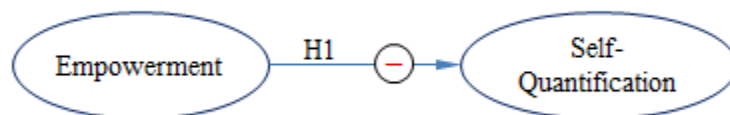
This points to the assumption that self-quantifiers can use social media metrics to achieve online empowerment. Relatedly, Grosser (2014) shows that following the social media metrics (number of likes, comments, friends, etc.) led users to craft self-imposed rules around the numbers that guided them on how, when, and with whom to interact, giving them power over that environment. In the context of social media, empowerment refers to people using social media to exert their influence or power on other people or companies. Thus, we can stipulate that self-quantifiers are not only motivated by empowerment, but they may satisfy that desire via “successful” social media metrics.

Diener and Biswas-Diener (2005) highlight that empowerment is not limited to the actual capability to complete a task or control one’s environment, but also represents the perception that has the ability to do so. Thus, if a perception of empowerment is created among self-quantifiers through other means than social media metrics, they may become less dependent on quantification. In other words, social media users that exhibit high (versus low) levels of empowerment should experience lower levels of self-quantification.

H1. Empowerment decreases self-quantification.

Figure 1

The effect of empowerment on self-quantification



The effect of self-quantification on brand- vs. self-focus

Users who are engaged in self-quantification are embarking on a journey to discover more about their selves (Sharon 2017), a quest that is reflected perfectly by the Quantified self movement's motto: "self-knowledge through numbers." The main goal of a self-quantifying activity is a focus on the individual (Sharon 2017), on personal motivation, and on individual benefit (Lupton 2016). One of the characteristics of self-Quantifiers is the desire to compare their personal numbers with others throughout the community (Lupton 2016), with this comparison enabling self-quantifiers to engage in self-evaluation and self-enhancement (Gibbons and Buunk 1999).

Focusing on increasing the worth of their online-selves (Grosser 2014; Lupton 2013), self-quantifiers may care less about the context or content than they do about achieving high account metrics. Thus, their intrinsic motivation to be online is overthrown by the potential rewards of their behavior. Their personal worth is confined by an environment that is dependent on quantification and that drives users to want more "likes," more comments and more friends (Grosser 2014). Users whose online status received more likes and comments reported greater happiness and self-esteem (Zell and Moeller 2018) and a satisfied need for belongingness (Reich et al. 2017), fueling a vicious circle of an insatiable "desire for more." (Grosser 2014). This concept of "the higher, the better" is also encountered in the brand management literature, where we observe that people prefer alphanumeric brands containing higher numbers in their name to those with lower numbers (Gunasti and Ross 2010).

Social media self-quantifiers function in an online community where their account metrics are not only generated, but also evaluated by the community members. This

constant evaluation against other people's metrics may determine self-quantifiers to engage in output-controlled behavior (Jaworski 1988), giving them complete control on what activities they choose for achieving their goals (Panagopoulos and Oglivie 2015). Anderson and Onyemah (2006) point out that customers always come first for those who engage in output-controlled behavior, leading to deduct that social media self-quantifiers will continuously focus on impressing the other online users.

Further, the goal theory (Locke and Latham 1990) tells us that, similarly to sales people, self-quantifiers who have clear goals (i.e., higher account metrics) feel motivated to engage in behaviors that help them achieving the goals. The best path for self-quantifiers toward achieving higher account metrics is to have a large base of loyal peers willing to like, share, or comment on their post. This motivation to impress the other users indicates a high need for social assimilation of self-quantifiers with their peers. Prior research suggests that people pursuing social assimilation will be strongly influenced by fear of negative judgments by others (Lennox and Wolfe 1984) and thus will engage in brand consumption behaviors that enables them to maintain a low profile—to blend in, and not stand out, in social settings (Kim et al. 2016), so as to enhance assimilation rather than identity differentiation (Berger and Heath 2007; Brewer 1991; Chan et al. 2012). Kohn (1993) shows that extrinsic motivation discourages risk taking, therefore SQs, being motivated by the potential rewards of their behavior, may be less willing to engage in activities that are posing a risk for their social approval ratings, such as affiliations of any kind, including with the community brand.

The rewards (in our case higher SM account metrics) determine SQs to engage in a temporary compliance behavior, aimed at obtaining the reward, and once that need is

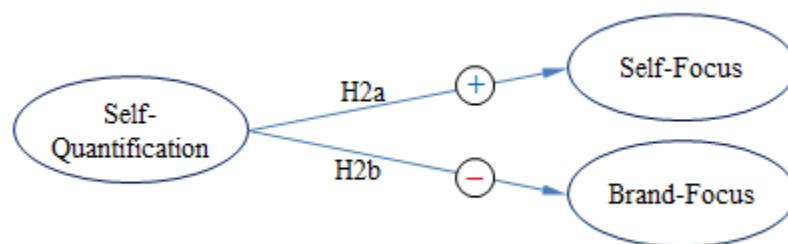
satisfied, they revert to their “old behavior.” This suggests that SQs are actively pursuing those activities that help them boost their account metrics, and therefore may have weaker, shorter-term relationships/engagement on social media channels. This intense focus on the self (Lupton 2013) and the tendency to avoid brand affiliations (Kohn 1993) determined us to posit that self-quantifiers exhibit a lower engagement with online brands:

H2a. *Consumers with higher focus on self-quantification exhibit **higher focus on self** on brand-owned social media channels than consumers with low focus on self-quantification.*

H2b. *Consumers with higher focus on self-quantification exhibit **lower focus on brand** while visiting brand-owned social media channels than consumers with low focus on self-quantification.*

Figure 2

The effect of self-quantification on brand focus and self-focus



The effect of self-quantification on brand engagement and behavioral intentions

People’s social actions are strongly predicted by their self-interest (Miller 1999). When their interest is at stake, people are more likely to engage in behaviors that help preserve their comfort (Green and Cowden 1992) or their benefits (Sivacek and Crano

1982). Furthermore, Kagan (1989) shows that self-interest is treated as a natural law and, since people do not want to violate natural laws, they behave in ways that preserve their self-interest. Being focused on their self-interest, such as increasing their social account metrics, self-quantifiers gear their behavior toward actions beneficial to these metrics. This means that as long as their self-interest is salient, people will most likely try to gratify it. But to keep their self-interest salient, people must continue to focus on themselves and on their needs; thus should engage less with other targets, such as other community members or community brands, if these do not align with their self-interests. Previous research indicates that social feedback facilitated by sharing within the community provides a channel for soliciting approval and external performance evaluations (Jung et al. 2010; Hildebrand et al. 2013; Zuckerman and Gal-Oz 2014) and usually promotes social reciprocity (Hamari and Koivisto 2015a; Munson and Consolvo 2012) rather than self-interest. When individuals pursue goals scarcely appreciated by their social group or community, they may avoid engaging in the community, as it cannot support their goal attainment (Latham 2003).

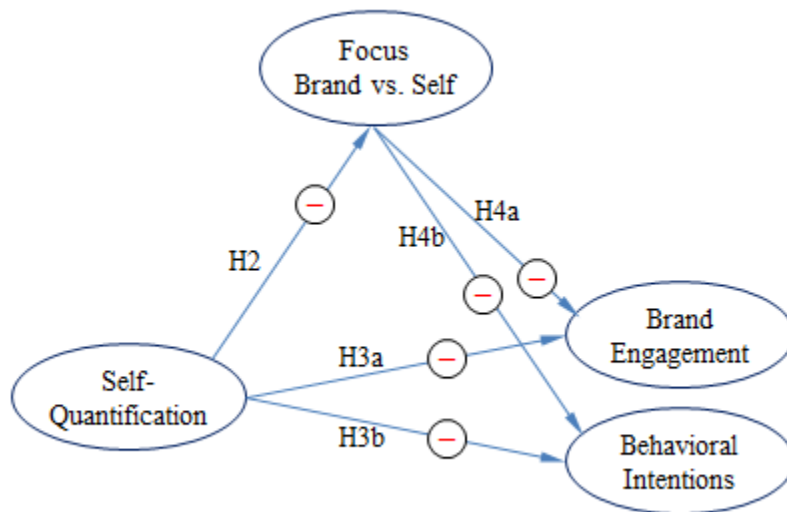
Hence, we hypothesize that high self-quantifiers will engage less with the community brands, and will manifest lower behavioral intentions towards the brands than low self-quantifiers, and that these relationships are mediated by the intensity of the consumers' focus on self versus brand.

H3. Consumers with higher focus on self-quantification exhibit lower brand engagement (H3a) and behavioral intentions (H3b) on brand-owned social media channels than consumers with low focus on self-quantification.

H4. The relationships between quantification of self and brand engagement (H4a) and behavioral intentions (H4b) are explained by consumers' focus on self versus brand.

Figure 3

The mediating effect of brand focus vs self-focus



The moderating effect of awe

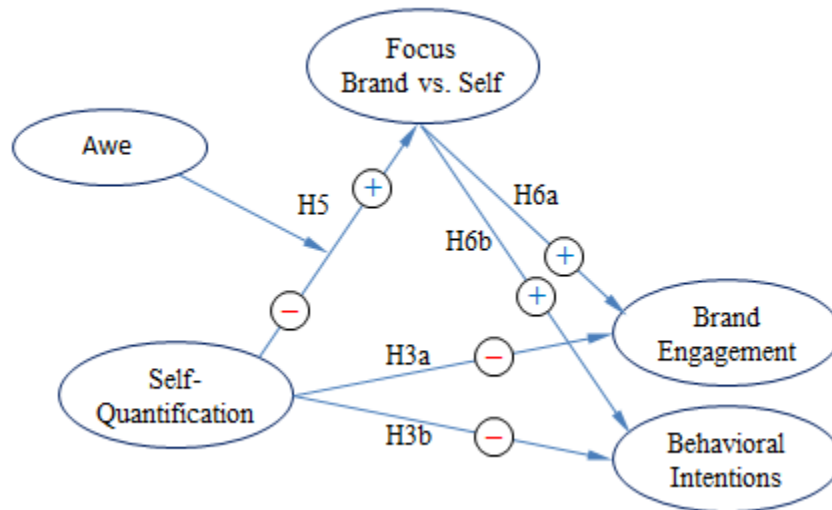
As discussed above, previous research has shown that feelings of awe may encourage people to focus less on themselves and more on their integration into social groups (Bai et al. 2017), induces feelings of smallness, insignificance, and humbleness (Keltner and Haidt 2003; Valdesolo and Graham 2014), which in turn result in an increase engagement with collectives (Bay et al. 2017). Further, research on social media indicates that awe can change people's engagement with social media content (Berger and Milkman 2012). Based on these findings, we expect awe to redirect the self-quantifiers' focus on self towards brands, thus increasing engagement with brands on social media.

H5. Awe moderates the relationship between self-quantification and consumers' focus on self versus brand.

H6. Awe moderates the mediated relationship between self-quantification and brand engagement, such that the effect of self-quantification on **brand engagement** (H6a) / **behavioral intentions** (H6b) on brand-owned social media channels will be weaker when awe is present (versus absent).

Figure 4

The moderating effect of awe



Conceptual Model

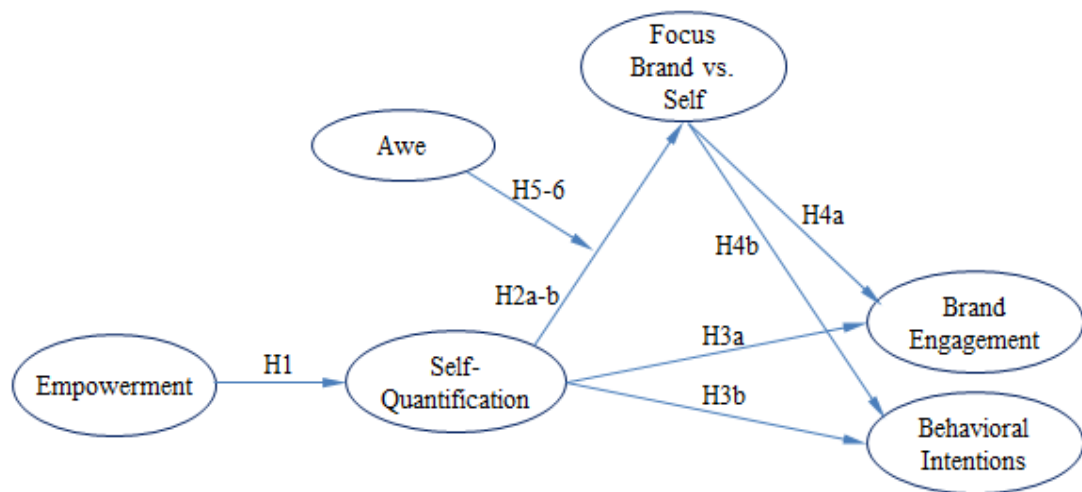
The overall conceptual model discussed in this dissertation is presented below.

We believe that online users engaging in self-quantification are searching for empowerment, and once this need is satiated, they will express a lower interest in self-quantification (H1). Also, due to their increased focus on self (H2a) and decreased focus on brands (H2b), self-quantifiers are expressing a lower brand engagement (H3a) and diminished behavioral intentions (H3b). However, when exposed to awe, we expect that

self-quantifiers will switch their focus from their selves toward the brand (H5), and therefore will exhibit higher levels of brand engagement (H6a) and behavioral intentions (H6b).

Figure 5

The entire conceptual model



CHAPTER 3

METHODOLOGY

The primary goal of this dissertation is to investigate the phenomenon of self-quantification on social media brand platforms. In a series of four studies, we tested the viability of the hypothesized framework of the effects of self quantification on online brand and self engagement. The studies primary examines how various factors influence the online self-quantification, and how this, in turn, affects peoples' levels of brand engagement. Study 1 and 3 used paid respondents from the Prolific platform, while studies 2, 4, and the pretest studies used undergraduate students who were compensated with class credit for their participation. Prolific is a superior online research panel (Peer et al. 2017) whose members are getting paid for their participation in behavioral, user, or market research (www.prolific.co). Given that we are interested in capturing the online behavior of consumers who are actively using social media platforms, we consider the student and Prolific samples to be representative for our target population, both in terms of technology savviness, and age. In our studies, the average age of the undergraduate students sample is in the low 20s, and of the Prolific respondents in the low 30s.

Study 1 Purpose

Our main goals in Study 1 were to examine whether online users are reporting self-quantifications behavior when visiting social media brand platforms, investigate the relationship between online empowerment and self-quantification, and understand if self-quantification is related to self or brand focus. Thus, the main focus of Study 1 is on testing the first two hypotheses related to the effect of empowerment on self-quantification (H1), and the self-quantification effect on self-focus (H2a) and brand-focus

(H2b). In addition, we wanted to test the validity of a self-developed scale measuring self-quantification on social media brand platforms, and compare it with an existing scale developed by Li et al. (2010) that tested general self-quantification on social media. In particular, we investigated the degree to which self-quantification diverges from several antecedents of brand engagement identified in the literature, such as need for self-expression, need for socializing / bonding, need for information / entertainment, and the attractiveness of the social media content.

Study 1 Participants

Two hundred and ninety members of the Prolific research panel (51% female, average age 35 years) participated in this Study and completed our web-based survey in exchange for monetary compensations (see Appendix 1 for a list of constructs measured in Study 1 and the scale items)

Study 1 Procedure

In study 1, we recorded participants' reported behavior with the help of a survey. We restricted the survey to those participants who were actively participating in online brand communities (i.e., Bosch, Audi, Starbucks, etc.) hosted on social media platforms like Facebook, Twitter, Instagram, etc. The respondents were asked to report their preferred social media platform and social media brand community, and these choices were carried forward throughout the survey, for an increased personalization of the survey. Next, they responded to a set of questions developed by Li et al. (2010) that measured the general self-quantification of social media, followed by questions measuring self-quantification expressed by online users when visiting their preferred social media brand communities. For the latter construct, a new scale was developed.

Measures of several antecedents of brand engagement identified in the literature (such as the need for self-expression, need for socializing, bonding and impression management, need for information and entertainment, and the social media content attractiveness) were also included in the survey. The survey ended with measurements of empowerment, brand focus, self-focus, and the respondents' demographics. More details of these measurements are provided in the next section, and in Appendix 1.

Study 1 Independent Variables and Covariates

Self-quantification. To determine the online users' levels of general self quantification on social media, we used the 7 -point scale developed by Li et al. (2010). Using a scale from 1 to 7 (when 1 = strongly disagree, 7 = strongly agree), participants were asked to express their level of agreement with statements such as "It is important to me that the social media platforms I use have accurate tools for tracking all activity related to my posts (such as numbers of views, likes, comments, shares, etc.)," or "I analyze my social media account data regularly".

To assess the construct's internal consistency and validity, we conducted a factor analysis, which showed that the seven items loaded on a single factor (Eigenvalue = 4.38), and a reliability analysis yielded a Cronbach's α of .90. Thus the items were averaged to form a self-quantification on social media index (SQSM). The summary statistics of the SQSM index are presented in the table below:

Table 2

Self-quantification on social media

N	Min	Max	Mean*	Std. Dev.
290	1	6.71	3.57	1.42

*lower value on a 1-7 scale means a reduced tendency toward self-quantification

These descriptive statistics presented in Table 2 show that respondents reported a wide range of SQSM levels, thus validating previous findings that self-quantification exists in social media environments. However, since the focus of our research is on brands on social media, we wanted to find evidence that self-quantification exists not only on social media in general, but on social media brand platforms in particular. For this purpose, we developed a twelve item scale aimed to capture the self-quantification tendency within a brand community, containing questions such as: “I monitor the performance of my posts in this brand community (number of shares, comments, likes, etc.),” or “If I care about the topic, it does not matter whether other people respond” (reverse coded) (see Appendix 1). The scale end-points were the same as for the previous scale: 1 = strongly disagree, 7 = strongly agree. Although the scale showed a satisfactory Cronbach’s α of .81, a factor analysis revealed that the 12 items loaded on 3 distinct factors, all with Eigenvalues larger than 1. After dropping five items with a lower loading on the first factor, the final scale included seven items loading on a single factor (Eigenvalue = 4.06, minimum factor loading = .75), and had a Cronbach’s α of .88. The summary statistics of the index resulted by averaging the seven items are presented in Table 3.

Table 3

Self-quantification on brand platforms

N	Min	Max	Mean*	Std. Dev.
290	1	7	4.37	1.19

*lower value on a 1-7 scale means a reduced tendency toward self-quantification

Study 1 Covariates

Several constructs identified in the literature as antecedents of brand engagement were measured: need for self-expression, need for socializing, bonding and impression management, need for information and entertainment, and the social media content attractiveness. Except for the social media content attractiveness, which was measured on a scale of 1 (strongly disagree) to 7 (strongly agree) (e.g., “I find the information in this brand community to be valuable,” or “The content of this brand page is eye-catching and picks me up”), all of the other constructs were measured using a 6-item, 7-point scale, for which the respondents were asked: “In general, when you are on social media sites, how often are you doing each of the following activities?” (1=never, 7=always). To understand the need for self-expression, participants were presented with items like “posting videos,” or “sharing my opinions.” The need for socializing / bonding, impression management was captured with items like “debating with other people,” or “meeting new people,” while the need for information / entertainment with items such as “browsing content created by others,” or “getting updates about personal interests.” Discriminant validity was evaluated by comparing the square root AVE of each construct to its correlations with other constructs (Fornell and Larcker 1981). For detailed information about the reliability and components of each scale, please see Appendix 1.

The correlations between constructs are presented in the Table 4 below:

Table 4

Discriminant validity of constructs related to online engagement

The diagonal presents the square root of Average Validity Estimate for each construct						
N = 290	Quantification on brand community	Quantification on social media	Need for self-expression	Need for socializing & bonding	Need for information, entertainment	Content attractiveness
Quantification on brand community	0.762	.551**	.403**	.493**	.193**	.343**
Quantification on social media		0.791	.443**	.483**	.259**	.130*
Need for self-expression			0.722	.715**	.359**	.242**
Need for socializing & bonding				0.762	.333**	.266**
Need for information, entertainment					0.672	.315**
Content attractiveness						0.759

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Discriminant validity is assessed using Fornell-Larcker criterion: the square root of a construct's AVE should be greater than its highest correlation with any other constructs.

Interestingly, all of these constructs are significantly correlated with each-other, which is an expected finding, given that all have an influence on consumer engagement. The correlation between the need for self-expression and the need for socializing and Bonding is on the high side (Tabachnick and Fidell 1996), we are not worried about it since we are not focusing on those constructs in this analysis. Furthermore, we observe that all AVE square root values are higher than the corresponding correlations, supporting discriminant validity (see Table 4).

Study 1 Dependent Variables

Empowerment. Our survey also captured participants' feelings of empowerment while on social media platforms. Specifically, we used the 17-item scale developed by Peterson et al. (2006) to measure the level of participants' agreement with statements about their online empowerment from 1 (strongly disagree) to 7 (strongly agree). We used statements like "I am often a leader in groups," "I like trying new things that are challenging to me," "My opinion is important because it could someday make a difference in my community," or "Most community leaders would listen to me." For the full description of the scale, please see Appendix 1. After checking the reliability of the scale, we averaged the items into an empowerment index (Cronbach's $\alpha = .93$).

Brand focus and self focus. We measured brand-focus and self-focus by using two 4-item scales adapted from Baldus et al. (2015), mirrored to apply to brand versus self. For example, one item in the brand focus scale would be "I look forward to hearing different people's opinions about the brand" while the corresponding item in the self-focus scale is "I look forward to sharing my opinions about the brand" (see Appendix 1 for complete details).

A factor and reliability analysis on the brand-focus construct shows that the four items load on a single factor (Eigenvalue = 2.53, minimum factor loading = .65), and produce a Cronbach's α of .79. The factor and reliability analyses for self-focus items showed similar results: one Eigenvalue larger than 1 (2.52), a minimum factor loading of .74, and a Cronbach's $\alpha = .80$, thus supporting the aggregate use of these items for measuring the two constructs.

Study 2 Purpose

Unlike Study 1, which used a descriptive design, Study 2 used an experimental design to study the causality between empowerment while on a brand community social media site and self-quantification.

Study 2 Participants

One hundred seventy eight undergraduate students (54.5% females) participated in this experiment for class credit.

Study 2 Procedure

Participants were randomly assigned to one of the two experimental conditions (high versus low empowerment). Study 2 started with the empowerment manipulation procedure aimed at creating higher or lower feelings of empowerment among participants (for details about the manipulation procedure and the pretest, please see the Independent Variable and Covariates section below). Following the empowerment manipulation, we measured self-quantification on the brand's social media page (the dependent variable), the perceived level of empowerment (as a manipulation check), and several covariates (such as brand familiarity, brand loyalty, brand knowledge, hours spent online, and participants' gender).

Study 2 Independent Variables and Covariates

In order to induce feelings of empowerment in our participants, we adopted the “empowerment-to-select” procedure used by Fuchs and colleagues (2010). In this scenario, a company asks for participants' help in deciding what products to put on the market by rating the attractiveness of several products. Being able to influence company's marketing decision is shown to create feelings of empowerment for those

involved in the influential activity (Fuchs et al. 2010). To develop the stimuli for the two empowerment conditions, we conducted a pretest which is described below.

Pretest. Two hundred thirty two undergraduate students (51.5% males) were exposed to two scenarios designed to manipulate empowerment.

Those in the high Empowerment condition were instructed to provide their help to an unknown European manufacturer of modern T-shirts (Rufel), by suggesting five models (out of 18) to be promoted on the U.S. market, and recommend their preferred material to be used for these shirts (from a pool of 4: cotton, linen, polyester, and spandex). Participants in the low Empowerment condition were simply ask to rate five T-shirt models from this company on a scale of 1-to-5 (1 = terrible, 5 = excellent), and to offer their opinion about cotton T-shirts. To check the manipulation, all participants had to provide their agreement with four statements describing their perceived Empowerment while on Rufel's online community. These four items were adapted from Menon (1999), and included items such as "I see that I have some control in determining which T-shirts will be produced by this company," measured on a 1-to-7 scale (1 = strongly disagree, 7 = strongly agree). The full scale is included in Appendix 1.

An ANOVA with the manipulated Empowerment as factor and the measured index or Empowerment (one Eigenvalue = 2.68, Cronbach's $\alpha = .82$) as the dependent variable showed a successful manipulation: participants in the high empowerment condition reported significantly higher empowerment levels ($M = 4.02$) than those in the low empowerment category ($M = 3.48$, $F(2,29) = 9.65$, $p = .002$).

Independent Variable. The empowerment manipulation was similar with the one developed in the pretest, except that we used a real brand name for the T-shirts, instead of

a fictitious one. Participants were informed that the European company Puma wants to enter the U.S. market with a new t-shirt collection, and they were seeing t-shirt wearing the Puma logo. Additionally, we asked each participant to write a short recommendation describing one improvement they would suggest to the brand. Following the manipulation, the respondents rated their perceived empowerment on Puma's social media platform, and answered questions intended to measure their self-quantification. *Covariates.* We asked the respondents to rate their familiarity with Puma products on a scale of 1 (not at all familiar) to 5 (extremely familiar). Participants' brand loyalty was captured with a question asking the participants to report how many Puma products they own on a scale of 1 (no Puma product) to 5 (more than 10 items), while brand knowledge was measured with a similar scale of 1 (not knowledgeable at all) to 5 (extremely knowledgeable).

Study 2 Dependent Variable

In Study 2, we were interested in seeing if participants' self-quantification while on Puma's social media site is affected by their level of empowerment. We measured self-quantification with a four-item 7-point scale adapted from Li et al., 2010 (1= extremely unlikely, 7 = extremely likely). We asked the participants to assume that they posted their suggestions on Puma's social media page, and to report their likeliness of checking how many comments/likes their post has within the next 24 hours. For a list of all the four items used in the scale, please see Appendix 1. After a factor analysis showed that the four items loaded on one factor (Eigenvalue = 3.19), and a reliability analysis produced a Cronbach's $\alpha = .91$, we averaged the items into an index of self-quantification.

Study 3 Purpose

The purpose of Study 3 was to investigate the effects of self-quantification on online users' focus on brand versus self, as well as on their levels of brand engagement and behavioral intentions, in an experimental setting.

Study 3 Participants

One hundred and fifty seven respondents recruited from the Prolific online panel (34.4% male, average age = 31.7 years) participated in the study for a monetary compensation.

Study 3 Procedure

Participants were randomly assigned to one of the two (low versus high) self-quantification conditions. Complete details of the pretest and the manipulation procedure are provided in the Independent Variable and Covariates section below. After the manipulation, participants answered questions measuring their levels of brand focus, self-focus, brand engagement, and behavioral intentions, as the main dependent variables, perceived self-quantification as manipulation check, and several covariates, such as familiarity and involvement with the brand.

Study 3 Independent Variables and Covariates

Researchers have manipulated self-quantification in previous studies by drawing the subjects' attention to the number of pages they read, or the self tracking devices they were wearing (Etkin 2016). We designed a similar methodology that can be applied in the social media environment, by drawing subjects' attention to aspects that quantify users' behavior in an online community.

Pretest. Two hundred and twenty two students (54.5% males, average age = 21.6 years) from the University of Rhode Island student research pool participated in a pretest designed to test the self-quantification manipulation procedure. Respondents were asked for their help in promoting a bubble tea brand's new presence on campus by describing four hypothetical pictures they would post on social media, while seeing an imaginary snapshot of the brand's Instagram page. Those in the high self-quantification condition were asked to describe the pictures in order to increase their "influence among Kung Fu Tea followers and generate interest for a new location near URI" and were also informed that the brand would reward them based on the number of followers, comments and likes their post generates. Furthermore, the Instagram snapshots displayed an influence tracker that would get bigger once they wrote their picture descriptions. Those in the low self-quantification condition were not informed about the reward, were simply asked to describe the pictures they would post in order to generate interest for the location, and their Instagram snapshots did not display the influence tracker. For more details about the manipulation, please see Appendix 2.

We measured self-quantification with a three item, 7-point scale intended to capture respondents' focus on their account metrics, such as number of responses to their posts. They had to express their level of agreement with statements about their potential engagement on the Kung Fu Tea social media page. We included the following items in the scale: "The brand measures the influence of people who post about it," "If I posted about the brand, I would be rewarded based on people's responses to my posts." and "If I posted about the brand, the number of responses I generated would matter." A factor analysis of these items used to measure self-quantification showed that all of them loaded

on a single factor (Eigenvalue = 2.22) and had a minimum factor loading of .77), while a reliability analysis produced a Cronbach's $\alpha = .82$. With the help of a one way ANOVA we observed that respondents in the high self-quantification condition expressed a higher self-quantification on the brand's social media page ($M = 4.27$) than those in the low self-quantification condition ($M = 3.78$, $F(216) = 6.10$, $p = 0.01$); thus confirming a successful manipulation.

Independent Variable. Self-quantification manipulation was slightly different from the pretest due to a small degree of confusion caused by the Instagram snapshots (respondents were tempted to describe the images presented in the snapshots instead of coming up with their own images). Instead of asking the respondents to post about a bubble tea brand while seeing an Instagram page snapshot, we asked them to **imagine** that they would post about Netflix shows or movies while focusing on the number of likes, replies, followers, or reactions, in general (for self-quantifiers), or without specific instructions (for non self-quantifiers).

Respondents in the high self-quantification condition were informed that an acquaintance working for Netflix asked them to become social media brand ambassadors for their favorite Netflix shows. As brand ambassadors they would have to “post about shows in a way that stands out and gets responses from other social media users,” and would be rewarded by Netflix based on the number of responses (such as followers, comments, and likes) they get to their posts. Respondents in the low self-quantification condition received a similar invitation for becoming brand ambassador for Netflix, but they were informed that they would be rewarded if they produce five posts per month. For the full description of the manipulation, please consult Appendix 2.

We expect the participants to pay a greater attention to their social media account metrics when they know that those numbers count towards their reward, thus exhibiting a higher level of self-quantification. At the opposite end, we believe that those who only need to meet a minimum criterion for receiving the rewards will have a lower tendency toward self-quantification.

Covariates. Since our study investigates respondents' behavior related to Netflix, a well-known brand, we included three 1-to-7 scale questions designed to capture respondents' familiarity and involvement with the brand. We asked the participants to rate their level of agreement (1 = strongly disagree, 7 = strongly agree) with the following statements: "I regularly watch shows on Netflix," "I regularly post about Netflix shows on social media," and "I consider myself a fan of some shows on Netflix."

Study 3 Dependent Variables

We measured brand-focus and self-focus using the same 5-item scales used in study 1, and we averaged each into an index after confirming the scales reliability (Eigenvalue_{brand-focus} = 2.68, Cronbach's α _{brand-focus} = 0.83, Eigenvalue_{self-focus} = 2.77, Cronbach's α _{self-focus} = 0.85). Finally, we calculated respondents' focus on brand versus self by computing the difference between brand-focus and self-focus, in a way similar to that from study 1.

Brand engagement with Netflix shows was measured using a 5 item, 7 point scale (1 = very unlikely, 7 = very likely) designed for social media environments. Respondents were asked to describe the likeliness to engage in social media relationships with Netflix shows, such as tagging, commenting, following, engaging with other users, and posting

branded content, items that we used to create a brand engagement index (one Eigenvalue = 3.50, Cronbach's α = .89).

To capture the consequences of consumer-brand engagement for the firm we developed a scale for measuring participants' behavioral intentions toward the brand tailored for a TV streaming service (Netflix). Respondents had to select their behavior preference toward items such as "watching" or "recommending" the Netflix service on 1-to-7 scales, where 1 means watching (or recommending) less, and 7 means watching (or recommending) more. The entire behavioral intentions scale is presented in Appendix 4. We averaged these five items to compute the behavioral intention index (one Eigenvalue = 2.72, Cronbach's α = .72).

Study 4 Purpose

The fourth study is designed to examine the mediating effect of consumers' focus on brand (vs self) on the relationships between self-quantification and brand engagement, and behavioral intentions, respectively. Furthermore, we investigated the role of awe in this relationship.

Study 4 Participants

Two hundred and seventy two undergraduate students from the University of Rhode Island participated in a 2(self-quantification: low / high) x 2(awe: low / high) conditions, between subjects experiment (average age = 21.7 years, 49.4% females) in exchange for class credit.

Study 4 Procedure

In a 2(self-quantification: low / high) x 2(awe: low / high) experimental design, participants were randomly assigned to one of the four conditions. First, they were exposed to the self-quantification scenario, altered from the previous study in order to separate participants' self-quantification reasons from the brand. Next, we exposed the respondents to the awe-manipulation scenario. More details about the manipulations are included in the Independent Variables and Covariates section below. Following these manipulations, participants had to answer a series of questions designed to measure their levels of brand versus self focus, brand engagement, and behavioral intentions as dependent variables, perceived self-quantification and awe feelings as manipulation checks, and several covariates, such as familiarity and involvement with the brand.

Stimuli development. In our pretest, we asked the respondents in the awe condition to watch a 50-seconds awe-eliciting video clip, while the rest of the participants watched a 50-seconds neutral clip.

Study 4 Independent Variables and Covariates

Pretest (Awe). To manipulate awe we adapted the awe-generating procedure used by Valdesolo and Graham (2014), where participants were exposed to a 5-minute BBC video clip showing shots of plains, mountains, space, and canyons. In the pretest, we have tested several options of low and high awe-inducing clips by creating three conditions, each including one high-awe and one low-awe video clip. All high-awe clips were 50 seconds long and contained the same awe-inspiring images, such as aurora borealis and breath-taking landscapes, but had different background music. Similarly, all low-awe clips contained the same 50 seconds long documentary about the American

buffalo, each with different background music. Ninety six undergraduate students were randomly assigned to one of the three conditions.

After watching the video clips, respondents had to rate the degree to which they felt several emotions (happiness, awe, sadness, disgust, boredom, and annoyance) on a scale of 1 (not at all) to 7 (extremely intense). We analyzed the manipulation by comparing respondents' emotions for high-awe versus low-awe video clips across all three scenarios, and determined that the most effective combination of high and low awe-inducing clips comes from scenario 2 and scenario 3, respectively. These clips did not induce feelings other than awe, and produced the maximum difference in reported means between low ($M = 3.73$) and high awe conditions ($M = 5.71$, $F(62) = 38.59$, $p < 0.0001$); thus were selected for the awe manipulation procedure.

Independent Variable (Awe). To manipulate exposure to awe, we used the two video clips (high versus low awe) identified in the pretest. Similar to the pretest, we also measured several other emotions potentially triggered by the video-clips. For a snapshot of the clips used in this study, please see Appendix 3.

Self-quantification. For the main study, we redesigned the manipulation of self-quantification. One of the concerns with the previous study was that participants' self-quantification was generated through the brand, and since the participants had an economic interest in the brand, they could have been more focused on it. In this study participants were informed that a social media platform is rewarding them for posting about their preferred brands. The brands themselves had no direct impact on respondents' rewards.

Thus, we made a clear difference between the brand they would post about and the hosting social media platform generating the rewards. Specifically, instead of asking the participants to become brand ambassadors for Netflix, we allowed them to select the streaming service that appeals more to them from a list containing Netflix, Amazon Prime, Disney+, and Hulu. Then all participants were introduced to “TopShow,” a new social media platform that “encourages its users to write honest reviews for movies and TV shows, and to engage in discussions on related topics.”

The participants in the high self-quantification condition were informed that TopShow offers 1,000 weekly vouchers (redeemable at most subscription streaming services) to users with to highest number of relevant posts and comments they make, and number of comments their posts generate. Respondents in the low self-quantification group were informed that the 1,000 weekly vouchers would be randomly allocated to TopShow users who were active that week on the platform. Appendix 2 contains the full description of the manipulation procedure.

Covariates. As in the previous study, we are exposing respondents to well-known brands; thus we included three 1-to-7 scale questions designed to capture respondents’ involvement with these brands. Participants had to rate their level of agreement (1 = strongly disagree, 7 = strongly agree) with statements such as: “I regularly watch shows on [user’s preferred choice of streaming service],” “I regularly post about [user’s preferred choice of streaming service] shows on social media,” and “I consider myself a fan of some shows on [user’s preferred choice of streaming service].”

Study 4 Dependent Variables

In the previous studies, the respondents were able to separately rate their focus on self and focus on brand while on social media platforms. In this study, the brand- and self-focus were measured using a bipolar scale from 1-to-7, where the extreme left (1) of the scale had items related to self, and the extreme right (7) had items related to the brand (in our case, the streaming service shows). More exactly, they saw the following question: “As a TopShow user, please select the point that corresponds most closely to your reasons for posting about a [user’s preferred choice of streaming service] show you like on TopShow social media platform.” One of the response options was “(1) To improve my image – (7) To improve the image of the show.” Respondents had the possibility to select any point between 1 and 7. The other three options were: to get attention for myself / show; to let people know about me / show; and to grow my audience / the shows audience. Although the scale has a neutral point (4), we were hoping that this method will, more reliably, capture the true focus of the users while being on a social media site. We averaged these four items into a “true focus” variable (one Eigenvalue = 3.12, Cronbach’s $\alpha = .90$) to be used as one of the dependent variables.

The other two dependent variables, brand engagement and behavioral intentions were measured and computed as in the previous study, with the minimal wording changes required by the new manipulation procedures. The resulted brand engagement index (Cronbach’s $\alpha = .90$) and behavioral Intention index (Cronbach’s $\alpha = .80$) showed good reliability.

Confirmation Bias

Because all of our studies included direct questions for the participants, the possibility of confirmation bias was raised. Confirmation bias, first identified by Wason (1960), is the tendency to interpret or filter the information in order to validate previous beliefs or ideas, or the inclination to confirm rather than falsify one's own hypothesis. In other words, once positive attitudes toward a brand have been generated, consumers act to sustain those positive attitudes (McKenzie 2006; Raghunatham et al. 2006). More relevant to this type of research, the confirmation bias can also manifest in the way researchers are framing their questions or research scenarios. As a result, some questions can be phrased in order to lead the subject toward giving specific responses.

Due to humans' general affinity towards this tendency, confirmation bias cannot be completely eliminated in research. One way of reducing confirmation bias in quantitative research is to have another researcher, neutral to the project, analyzing the questions intended for respondents. In our case, we asked a college professor unaffiliated with URI and uninvolved in this research to examine our surveys before using them for collecting data. As a result, several questions were reworded to be clearer and exert no influence on respondents' answers.

CHAPTER 4

FINDINGS

Study 1 Overview

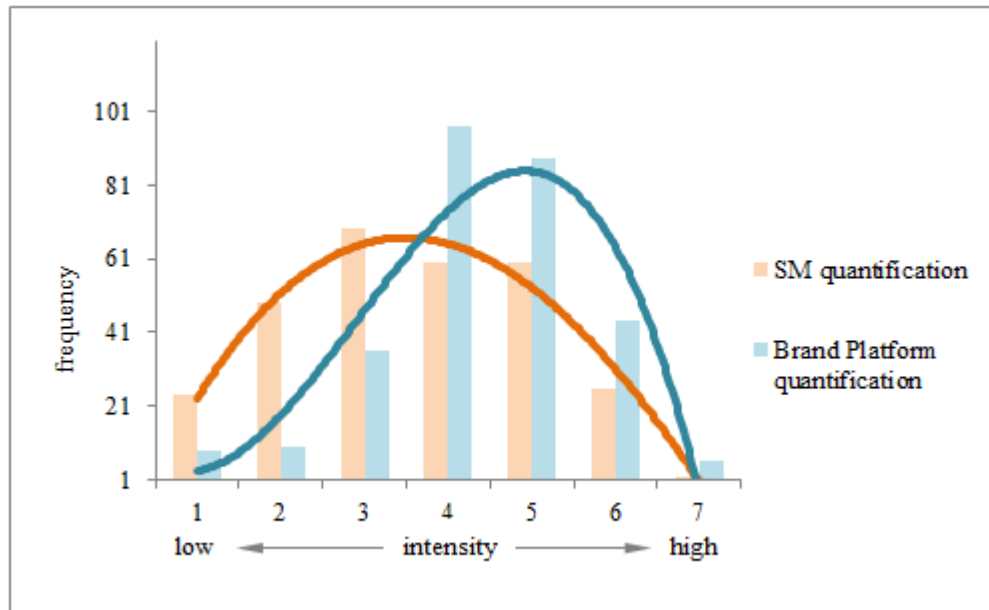
Our intention with Study 1 was to explore the difference between peoples' level of self-quantification on social media in general, and on social media brand platforms in particular; understand the relationship between online empowerment and self-quantification, and investigate how self-quantification relates to self and brand focus.

Study 1: The difference between general social media self-quantification and social media self-quantification on brand platforms

One of our goals at the start of this research was to determine whether the self-quantification phenomenon has the same intensity on social media in general versus brand-related social media sites. An interesting observation resulting from our first study is that online users tend to express a higher self-quantification when visiting social media brand platforms ($M = 4.37$, $SD = 1.19$), than when they are generally on social media ($M = 3.57$, $SD = 1.42$, $t(289) = -10.75$, $p < 0.001$). The chart below shows how the two types of self-quantification coexist in the online environments.

Chart 1

Online self-quantification on brand platforms and on general social media



In our analyses throughout the remaining of this research, we used this newly developed index on self-quantification on social media brand platforms, and simply referred to it as self-quantification.

Study 1 test of H1: Empowerment decreases self-quantification

Our first hypothesis suggests that people expressing high levels of empowerment should be less interested in self-quantification. Using a binomial regression we observed that empowerment significantly predicted self-quantification ($B = .69$, $t(288) = 10.54$, $p < .0001$). Empowerment also explained a significant proportion of variance in self-quantification scores ($R^2 = .28$, $F(1, 288) = 111.17$, $p < .0001$). Although significant, the

relationship between Empowerment and self-quantification points in the opposite (positive) direction that the one hypothesized in H1.

Study 1 test of H2: Self-quantification increases self-focus and decreases brand focus

Our second hypothesis states that high self-quantifiers show a greater focus on self (H2a) and less focus on brand (H2b) compared to low self-quantifiers. First, although not directly related to our hypothesis, it was interesting to see that social media users show a significantly higher level of brand-focus ($M = 5.28$) than self-focus ($M = 3.79$, $t(289) = 20.44$, $p < 0.001$) regardless of their level of self-quantification..

Next, to test our hypothesis, we divided the level of self-quantification into high and low by using the median split technique, given the recent rebuttal of inflated Type I error risk associated with this method (Iacobucci et al. 2015). And because the participants were not randomly assigned to these conditions, we included the individual difference factors such as time spent on social media, age, gender, level of education, employment status, marital status, and household income as covariates in the next analyses.

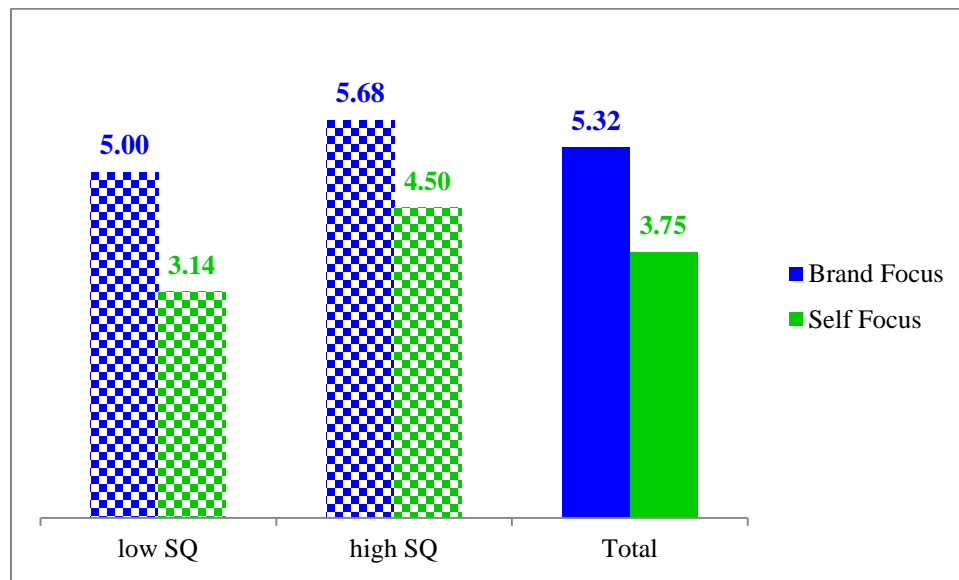
A one-way MANOVA with the dichotomous self-quantification variable as factor, brand- and self-focus as dependent variables, and the above covariates show that there is a significant difference in users' focus on self and on brand between to two self-quantification levels ($F(2, 174) = 29.35$, $p < .001$; Wilk's $\Lambda = 0.75$, $\eta^2 = 0.25$).

We followed-up with one-way ANOVAs to test the effects on each dependent variable and observed that respondents in the high self-quantification group reported a higher focus on self ($M = 4.50$) than those low in self-quantification ($M = 3.15$, $F(175) = 54.47$, $p < 0.001$, $\eta^2 = 0.24$), providing support for H2a. In addition, those high in self-

quantification showed a higher focus on brand ($M = 5.68$) than respondents in the low self-quantification category ($M = 5.00$, $F(175) = 22.99$, $p < 0.001$, $\eta^2 = 0.12$). Thus, although the difference is statistically significant, it is in the opposite direction that the one predicted in H2b. A graphical representation of these means is displayed in the following chart.

Chart 2

Brand- and self-focus at high and low levels of self-quantification



Constructs measured on 1-7 scale, where 1=lowest focus, and 7=highest focus

Study 1 Post Hoc Analyses

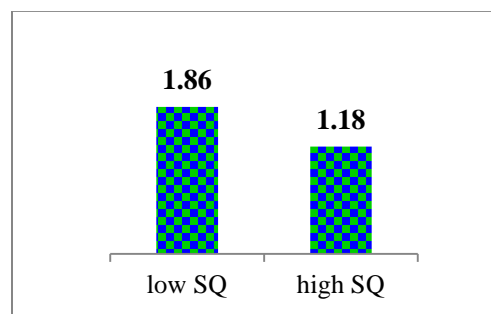
Although not hypothesized, we compared brand versus self focus levels within each self-quantification condition. We found that brand-focus is significantly higher than self-focus both at low levels of self-quantification ($M = 4.93$ vs. $M = 3.22$, $t(151) = 16.52$, $p < 0.001$, Cohen's $d = 1.34$) and at high levels of self-quantification ($M = 5.66$ vs. $M = 4.42$, $t(137) = 12.65$, $p < 0.001$, Cohen's $d = 1.08$). Even though the difference

between brand-focus and self-focus is in the same direction for both levels of self-quantification, it is evident from the graph that there is a higher absolute difference between brand- and self-focus for those in the low self-quantification group than for those in the high SQ one.

To further investigate this aspect, we created a new variable by computing the difference between brand-focus and self-focus. Higher values of this new variable should reflect a greater focus on the brand expressed by users. A one-way ANOVA with this new variable as the dependent variable, the dichotomous self-quantification as the independent variable, and the individual difference factors as covariates shows a significantly higher focus on brand for those in the low SQ group (brand-self difference = 1.86) than for those in the high SQ group (brand-self difference = 1.18, $F(175) = 13.91$, $p < 0.001$, $\eta^2 = 0.07$), as presented in the following chart.

Chart 3

The difference* between brand- and self- focus



*measured on 1-7 scale

Thus, although both high and low self-quantifiers focus more on brand than on self, the focus on brand (vs. self) is much more evident for low (than for high) self-quantifiers. This interesting finding offers partial support for our H2b hypothesis.

Study 1 Discussion

In study 1 we developed and validated a new scale for measuring users' self-quantification while visiting social media brand platforms, and established that this concept is related to, but entirely different than self-quantification on social media in general. Further, we observed that the self-quantification level of the social media brand platform visitors is significantly higher than that of general social media users. Brand managers can take advantage of this phenomenon and promote their brands with tools that stimulate self-quantification such as influence levels, expert points, or any numerical rewards that can reflect and be visible on users' accounts.

We also found out that users visiting social media brand platforms are experiencing higher levels of brand-focus than of self-focus, suggesting an increased community effect of the brand platforms. Managers could note that the users of these brand platforms are already primed to absorb more brand-related information than general users of social media, and focus their resources more efficiently. This effect holds for both high and low self-quantifiers, as both types of users show a higher focus on brand than on self. However, the absolute difference between brand- and self-focus is higher for low self-quantifiers than for high self-quantifiers, which provides some level of support to our hypothesis.

Our finding that high self-quantifiers have a higher focus on brand than low self-quantifiers stands against the theorized enlarged self-focus of those who engage in self-

quantification. This is an interesting finding, suggesting that the online process of self-quantification is not entirely understood, and that there are significant differences between off-line and online self-quantifiers. This phenomenon may be explained by the self-quantifiers' output-controlled behavior (Jaworski 1988), which offers them full control in deciding on what to focus (Panagopoulos et al. 2015) in order to achieve their quantification goals, including focusing on the brand.

One of the last results of this exploratory study indicated a significant relationship between online empowerment and self-quantification, but not in the hypothesized direction. According to our results, empowerment is a stimulant of self-quantification, and not a deterrent. In the next study we will investigate this relationship again, this time with an experiment.

Study 2 Overview

Since, contrary to our expectations, the results of the first study showed that high empowerment was associated with high self-quantification, we wanted to test this relationship using an experimental design with manipulated (rather than measured) empowerment. Based on previous research suggesting that self-quantification leads to higher feelings of empowerment (Seçkin 2011), we hypothesized that users exposed to increased levels of empowerment will exhibit lower levels of self-quantification. The experiment had a 2 (empowerment: low or high) conditions between-subjects design and contained several questions aimed at capturing the brand engagement levels. Brand familiarity, brand loyalty, brand knowledge, and gender showed no effect as covariates in our model; thus we did not report them in our findings.

Study 2 Manipulation check. We measured perceived empowerment using the same four-item scale used in the pretest study. As expected, the scale showed good reliability (one Eigenvalue = 2.77, Cronbach's $\alpha = .84$) and demonstrated a successful manipulation: respondents in the high empowerment condition reported significantly higher level of empowerment ($M = 3.22$) while on Puma's social media site than those in the low empowerment condition ($M = 2.72$, $F(179) = 6.07$, $p = .02$).

Study 2 Test of H1: Empowerment Decreases Self-Quantification

Our first hypothesis posits that empowerment decreases self-quantification. A one-way ANOVA using the manipulated empowerment as factor and the measured self-quantification as the dependent variable show that the reported self-quantification of those in the high empowerment condition ($M = 5.44$) is higher than those in the low empowerment group ($M = 5.10$), but not in a significant way ($F(179) = 2.11$, $p = .15$, $\eta^2 = 0.01$), thus not supporting our H1 hypothesis.

Study 2 Discussion

Our results show that people that feel more empowered have a higher level of self-quantification than those that are not empowered. However, the results are not statistically significant, which we suspect to be due to a manipulation that was not very strong. Indeed, the average Empowerment for the high-empowered respondents was below the scale midpoint ($M = 3.22 < 4.0$). Since even this small change in empowerment produced a visible directionality of self-quantification, a stronger manipulation will perhaps show significant effects. Interestingly though, and similar to the results of study 1, self-quantification moves in the same direction as empowerment.

We continued exploring our theoretical model by investigating the effect on self-quantification on brand focus, self-focus and brand engagement.

Study 3 Overview

We designed study 3 with a two-fold purpose in mind: first we wanted to design and test a self-quantification manipulation procedure, and second we were interested in seeing if self-quantification has the hypothesized effects on users of brand-owned social media. Specifically, we suggested that high self-quantifiers will have a higher focus on self (H2a) and a lower focus on brand (H2b) than low self-quantifiers. We also inferred that high self-quantifiers will exhibit a lower brand engagement (H3a) and lower behavioral intentions toward the brand (H3b) than low self-quantifiers. The study was one-factor design with two manipulated conditions: low and high self-quantification, and measured respondents levels of brand focus, self-focus, brand engagement, the consequences of brand engagement under the form of behavioral intentions, and reported self-quantification.

Study 3 Manipulation check. We captured respondents' level of self-quantification by asking for their level of agreement with four statements describing the fictitious rewarding process implemented by Netflix. They were asked to use a scale of 1-to-7 (1 = strongly disagree, 7 = strongly agree) to express their agreement with the fact that Netflix bases its reward system on the number of responses generated by their posts. "If I served as a brand ambassador, Netflix would reward me the same way regardless of the number of responses to my posts" is just an example of the items used in this scale. For full scale, please see Appendix 2. After running a factor analyses for these four items (Eigenvalue =

2.91, minimum factor loading = .81), and a reliability analysis (Cronbach's $\alpha = .87$), we used the new self-quantification index to verify the manipulation. An ANOVA shows that respondents in the high self-quantification condition reported higher beliefs of self-quantification ($M = 6.56$) than those in the low self-quantification condition ($M = 5.12$, $F(155) = 118.28$, $p < 0.001$); thus suggesting a successful manipulation.

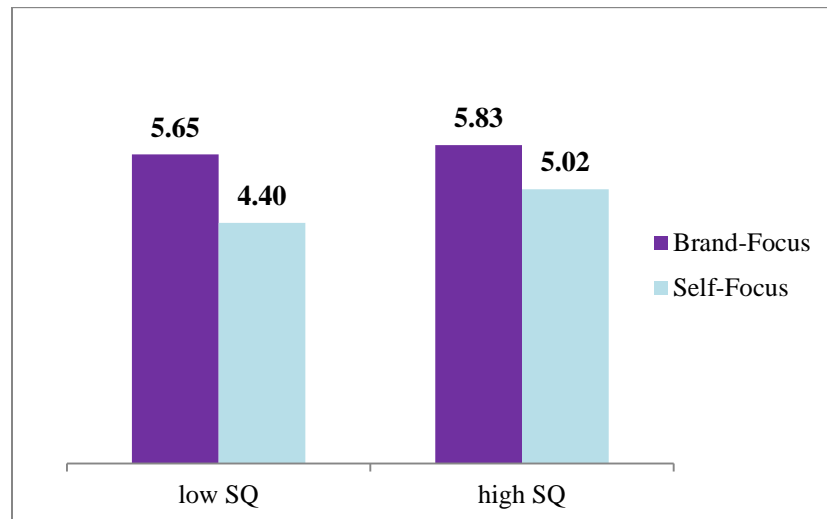
Study 3 Results of H2 Test: Self-quantification increases self-focus and decreases brand focus

We ran a one-way MANOVA with brand- and self-focus as dependent variables and the manipulated self-quantification as the independent variable, while controlling for their involvement with Netflix (using the three covariates described above), and we observed a significant difference in users' focus on self and brand based on self-quantification level, $F(2, 151) = 4.05$, $p = .02$; Wilk's $\Lambda = 0.95$, $\eta^2 = 0.05$.

Separate ANOVAs for brand-focus and self-focus using the same covariates showed no significant difference in brand focus levels between high and low self-quantification conditions ($p = .58$); thus not offering direct evidence in support of our H2b hypothesis. However, we could observe a significantly higher level of self-focus ($M = 5.02$) for the participants in the high-quantification condition than for those with low self-quantification ($M = 4.40$, $F(152) = 8.10$, $p = .005$, $\eta^2 = 0.05$), in support for our H2a hypothesis. The chart below presents the numbers:

Chart 4

Brand- and self-focus at high and low levels of self-quantification



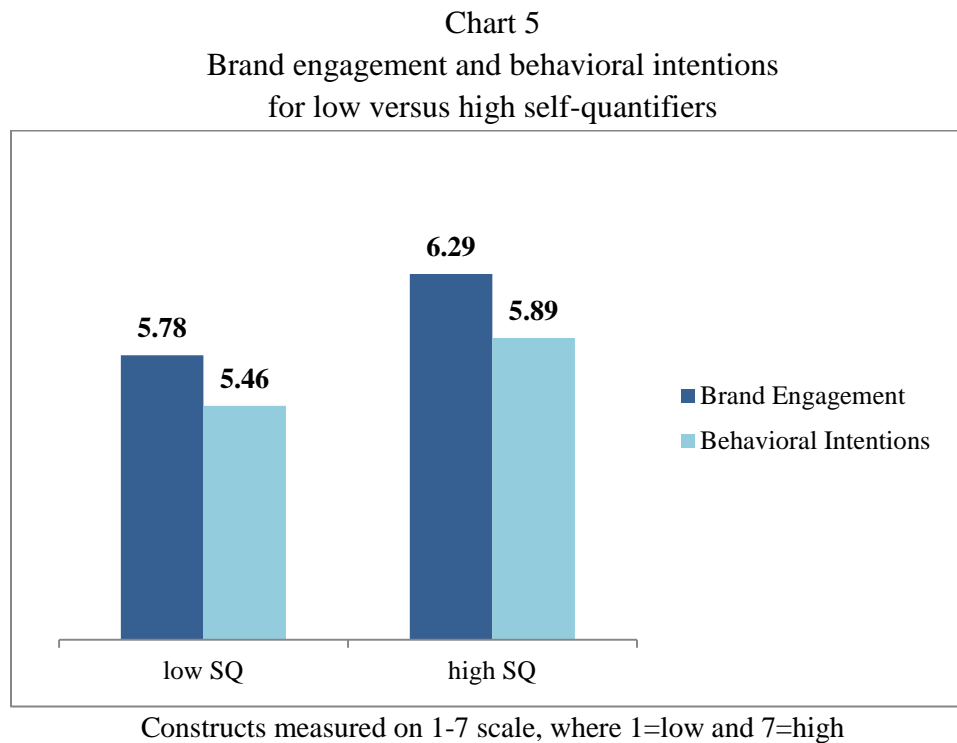
Constructs measured on 1-7 scale, where 1=low focus and 7=high focus

Further, we investigated the effect of self-quantification on consumers' focus on brand versus self with an ANOVA, while controlling for their involvement with Netflix. Similar to study 1, we noticed a significantly higher gap between brand- and self-focus for those in the low SQ group (brand-self difference = 1.25) than for those in the high SQ group (brand-self difference = 0.81, $F(152) = 5.25$, $p = 0.02$, $\eta^2 = 0.03$), direction that offers partial support for our H2b hypothesis.

Study 3 Test of H3: Self-quantification reduces brand engagement and behavioral intentions

For testing the third hypothesis we ran two separate ANOVAs with self-quantification as the independent variable, and brand engagement and behavioral intentions as the dependent variables, respectively, while controlling for participants' involvement with Netflix with the three covariates (regular watch Netflix, regular post about Netflix, and fan of Netflix shows). Participants in the high self-quantification

condition show a significantly higher brand engagement on social media ($M = 6.29$) than those in the low self-quantification condition ($M = 5.78$, $F(152) = 7.70$, $p = 0.006$, $\eta^2 = 0.05$), as well as a significantly higher behavioral intention ($M = 5.89 > M = 5.46$, $F(152) = 11.37$, $p = 0.001$, $\eta^2 = 0.07$). A visual representation of these effects is included in the chart below.



Surprisingly, these findings not only that do not support our H3 hypotheses, but they indicate the opposite of our expectations: consumers with higher focus on self-quantification exhibit higher brand engagement and behavioral intentions on brand-owned social media channels than consumers with low focus on self-quantification. We will discuss the theoretical aspect of these results at the end of the paper.

Study 3 Discussion

Study 3 provided further support for our H2a hypothesis, while revealing several interesting aspects related to our operationalization and results. We noticed that participants who were supposed to be rewarded by Netflix for a minimum number of posts (low self-quantifiers) exhibited a significantly lower self focus level than those who were promised rewards (high self-quantifiers) based on the number of responses their post generates. On the other hand, this difference in Netflix' rewarding system had no effect on the participants' brand focus level. This means that, as hypothesized, high self-quantifiers have an increased tendency to focus on the self than low self-quantifiers, at least when the self-quantification is brand induced. Furthermore, participants who were supposed to be rewarded by Netflix based on the number of reactions their posts have online (high self-quantifiers) expressed a higher engagement with Netflix and higher behavioral intentions toward Netflix than participants whose rewards were not dependent on the responses to their posts. This means that, contrary to our expectations, self-quantification – especially brand-generated – has beneficial effects on brand engagement and behavioral intentions toward the brand. In our next study, we want to separate the reasons for quantification from the brand, use a different method of capturing respondents' focus on self versus brand, and examine if we these results can be replicated, while adding another stimulus to the model.

Study 4 Overview

Study 4 was designed to test the moderated mediation model examining whether self-quantification has an effect on brand engagement and behavioral intentions through consumers' main focus (brand versus self), and if this mediation is affected by an awe-generating intervention. The experiment employed a 2 (self-quantification: low / high) x 2 (awe: low / high) between-subjects design, and measured participants' main focus (brand versus self), brand engagement, behavioral intentions toward the brand, and several covariates and other items required for manipulation checks. We expect to see that self-quantification increases self-focus (H2) and decreases brand engagement (H4a) and behavioral intentions (H4b). However, when respondents are exposed to awe, we expect these changes to disappear or even to be reversed (H5, H6).

Study 4 Manipulation check. Participants' self-quantification was measured as in the previous study, with small wording changes to reflect the new manipulation procedure. The item exemplified in the previous study became "As a TopShow user, I could be rewarded by the platform the same way regardless of the number of responses to my posts." For readers' convenience, the entire scale is included in Appendix 2. The manipulation was checked with an ANOVA using the manipulated self-quantification as the factor, and the measured self-quantification index ($\alpha = .61$) as the dependent variable. As expected, participants in the high self-quantification condition reported higher levels of self-quantification ($M = 4.93$) than those in the low self-quantification group ($M = 4.37$, $F(270) = 19.85$, $p < .0001$), indicating a successful manipulation.

Similar to our described pretest, to capture respondents' feelings of awe, we used a series of direct questions asking them to report the level of emotions felt after watching

the video clip. Participants exposed to awe-eliciting materials reported a higher level of awe ($M = 4.58$) than those exposed to the American Buffalo documentary ($M = 3.53$, $F(269) = 23.96$, $p < .0001$); thus confirming the desired manipulation. However, despite our efforts to reduce feelings of happiness, respondents in the high awe condition still reported higher happiness ($M = 4.55$) than those in the low awe condition ($M = 3.84$, $F(271) = 13.17$, $p < .0001$), thus we used happiness as a covariate in our main analysis.

The Process macro for SPSS (Model 7, 5000 bootstrapped samples) developed by Andrew Hayes (2013) helped us testing all hypotheses. Our main model predicts that high self-Quantifiers should show a lower level of brand engagement (H3a) and behavioral intentions (H3b) because of their lower true focus on brand rather than self (H4). Furthermore, when high self-Quantifiers are exposed to awe, their true focus should point toward brand rather than self (H5) and their levels of brand engagement (H6a) and behavioral intentions (H6b) should increase.

Study 4 Test of H2: Self-quantification increases self-focus and decreases brand focus

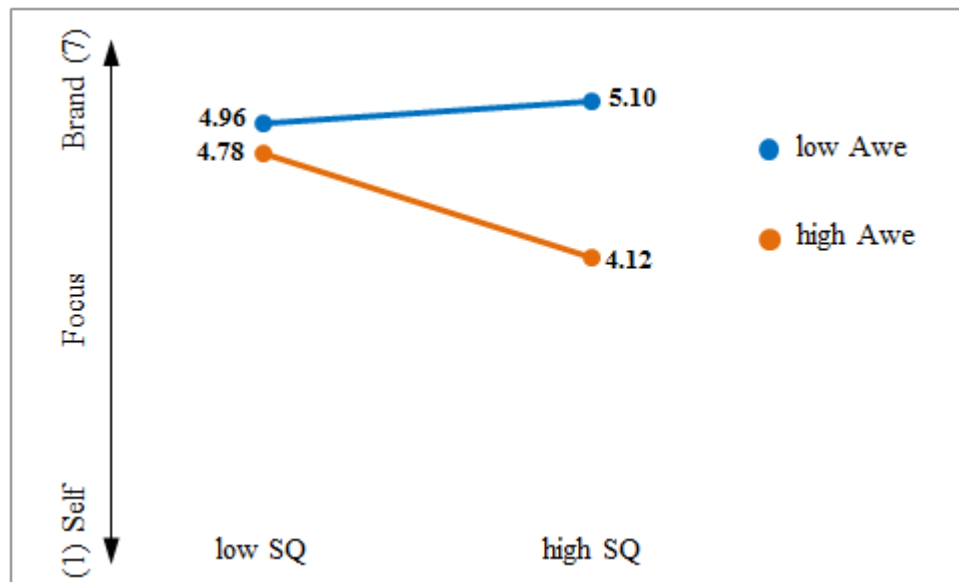
First we used *brand engagement* as the dependent variable, with self-quantification as the IV, true focus as the mediator, and awe as moderator. The model also included four covariates: measured happiness plus the three variables measuring participants' personal involvement with the shows (watching regularly, posting regularly, and being a fan). The variables, including the interaction, explained 7.8% of the variance in true focus ($p = .003$). The effect of self-quantification (coefficient = 0.93, SE = 0.59, 95% CI [-0.23, 2.10]) and of awe (coefficient = 0.61, SE = 0.60, 95% CI [-0.56, 1.78]) on

true focus were not significant, thus not showing support for the direct effect hypothesized in H2.

Study 4 Test of H5: Awe moderates the relationship between self-quantification and consumers' focus on self versus brand

The interaction between self-quantification and awe (coefficient = -0.80, SE = .37, 95% CI [-1.53, -0.06], $p = .03$) was significantly related to true focus. The effect of the moderator was significant for consumers in the higher (but not lower) awe condition ($t = -2.50$, $p = .01$; CI [-1.17, -0.14]). The effect suggests that self-quantification only had an effect on true focus when awe was high, supporting the moderated effect of awe (H5), but not in the hypothesized direction. The chart below displays the obtained moderated effect.

Chart 6
Self-quantification effect on true focus in the presence of awe



Study 4 Test of H3a and H4a: Self-quantification decreases brand engagement (H3a), and focus on self vs brand mediates this relationship (H4a).

The overall model explained 15.3% of the variance in brand engagement ($p < .0001$). While the direct effect of self-quantification was not significant ($p > .05$), thus not offering support for H3a hypothesis, the true focus has a significant effect on brand engagement (coefficient = 0.23, SE = .06, 95% CI [0.12, 0.35], $p = .0001$), offering full support for the mediation proposed in H4a, but not for the hypothesized level of self-quantification.

Study 4 Test of H6a: Awe moderates the mediated relationship between self-quantification and brand engagement, such that the negative effect of self-quantification on brand engagement through true focus will be weaker.

We expected this effect of true focus on brand engagement to appear at low and not high levels of self-quantification. Furthermore, the indirect effect of self-quantification on brand engagement through true focus was only significant for respondents in the high awe condition (coefficient = -0.15, SE = 0.08, 95% CI [-0.33, -0.02]). The index of moderated mediation was -0.19 (SE = .10, 95% CI -0.41, -0.01], which supports the hypothesis for moderated mediation (H6a), but not the hypothesized directionality.

Study 4 Test of H3b and H4b: Self-quantification decreases behavioral intentions (H3b), and focus on self vs brand mediates this relationship (H4b).

Next we used *behavioral intentions* as the dependent variable, with self-quantification as the IV, true focus as the mediator, awe as moderator, and the four covariates. The overall model explained 10.3% of the variance in behavioral intentions (p

= .0001), and didn't show a direct effect of self-quantification ($p > .05$), thus not offering support for H3b hypothesis. However, true focus has a significant effect on behavioral intentions (coefficient = 0.17, SE = .04, 95% CI [0.09, 0.25], $p = .0001$), offering full support for the mediation proposed in H4b, but not for the hypothesized level of self-quantification.

Study 4 Test of H6b: Awe moderates the mediated relationship between self-quantification and behavioral intention, such that the negative effect of self-quantification on behavioral intentions through true focus will be weaker.

Additionally, the indirect effect of self-quantification on behavioral intentions through true focus was only significant for respondents in the high awe condition (coefficient = -0.11, SE = 0.06, 95% CI [-0.23, -0.02]). A significant index of moderated mediation of -0.13 (SE = .08, 95% CI -0.30, -0.01], supports the hypothesis for moderated mediation (H6b), but not the hypothesized directionality.

Study 4 Discussion

Mediating effects of true focus (brand versus self). Although we obtained mixed results in this study, it is important to highlight that the proposed mediation effect of true focus on brand engagement and behavioral intentions is valid: true focus fully mediated the relationship between self-quantification and both brand engagement and behavioral intentions. Higher levels of true focus (i.e., more brand focus than self focus) generated by self-quantification resulted in higher levels of brand engagement and behavioral intentions.

Moderating effect of awe. Similarly important, awe has the expected moderating effect on the self-quantification – true focus relationship. While awe has no effect on

respondents' level of true focus in the low self-quantification condition, it lowers the true focus level (meaning more focus on self) for those in the high self-quantification group. This means that when self-quantifiers are exposed to awe, they become more focused on their self than on the brand.

Moderated mediation model. These results also support our assumption that awe moderates the relationship between self-quantification and brand engagement through consumers' true focus. While we did not obtain the hypothesized directions, the effects are significant nonetheless. We observed that self-quantification lowers consumers' true focus (= more focus on self), which in turn produces a lower brand engagement and behavioral intentions toward the brand only when participants were exposed to high levels of awe. In other words, awe did not help self-quantifiers increase their focus on brand (rather than self). On the contrary, the positive effect of self-quantification on brand engagement was reduced in the presence of awe.

CHAPTER 5

CONCLUSION

At the beginning of this work, we raised several research questions, which we will attempt to answer based on the results obtained in our four studies.

(1) When and how does self-quantification affect brand engagement?

In our first study we saw that self-quantification is omnipresent on social media, but it manifests higher on brand platforms. With the help of several studies, we identified a strong direct or indirect relationship between self-quantification and brand engagement; thus it is safe to state that brands are affected by self-quantification every time consumers are active online. However, it is interesting that self-quantification is not detrimental to the brand. On the contrary, our research demonstrated that people engaging in self-quantification are characterized by high brand engagement, and high behavioral intentions. Capturing behavioral intentions toward the brand allowed us to realize that online users are not only using the brand for their self-quantifying needs, but they are inclined to invest more time into the brand (watch more shows, and learn more about them), recommend the brand more, willing to pay more to subscribe, and increase their brand loyalty.

(2) Do self-quantifiers refrain from engaging with brands due to the risk of social disapproval and lower ratings? Will they engage when they know that their “desire for more” will be satisfied, although the engagement does not reflect their “real” motivation for engaging with brands?

This series of questions stemmed from our original theoretical background. When confronted with the results obtained in this study, we observed that the behaviors

suggested here did not materialize in practice. On the contrary, self-quantifiers are more actively engaging with brands than non-self-quantifiers, and the satiation of their self-quantification need (hypothesized to take place once their level of empowerment is high) does not prevent them from further engaging in self-quantification. These findings suggest that high levels of empowerment coexist with high level of self-quantification. Menon (1999) explains that the first dimension of empowerment, the perceived control, reflects the perceived level of available resources for completing a task, and the perceived control over those resources. It is understandable if self-quantifiers see their data as their resources to complete their self-quantification task, thus the more data they have, the more empowered they feel. In addition, their focus on self-quantification gives them more confidence that they can control the numbers, further increasing their empowerment feelings. More likes, more friends, and more comments are a strong sign that quantifiers are influencing their online communities, which also translates in higher empowerment (Berger & Neuhaus, 1977; Katz, 1984; Zimmerman & Rappaport, 1988).

(3) Finally, in the context of self-quantification, how can brands manage consumer engagement on social media? We know from the literature that self-quantifiers have a strong focus on their self-performance. Would a shift of the consumers' focus away from themselves help increase brand engagement?

Self-quantification and brand versus self focus

When consumers' focus on brand and on self was measured separately, and without any experimental intervention, we observed that high self-quantifiers express a higher focus on brands than low self-quantifiers. This is one of the most interesting

findings of this research and is the key to understanding the overall effect of self-quantification on brand engagement.

At the beginning of this research we expected self-quantifiers to behave similarly both offline and online, and had no reasons to believe otherwise. However, as we observed in Chart 1 above, self-quantification differs in intensity on the overall social media networks versus specific brand platforms. Since these two online environments are significantly different from each other, and we know that humans' behavior is automatically shaped by their social environments (Bargh et al. 1999; Dijksterhuis & Knippenberg 2000), it is reasonable to assume that offline self-quantification should be different than self-quantification observed on brand-specific online platforms. This observation is in line with previous research stating that general social media differs from brand-related social media with regard to the type of their users' motivations (Muntinga et al. 2011).

When people develop close relations with others, they may focus so much on the other person that they will not perceive their caring or helping behavior as taking away from the focus on themselves (Aron et al. 1991). Same phenomenon can be observed when people are getting highly attached to personal belongings or own creations. They end up carrying more about these objects or ideas than about their selves. A social media account is, in fact, one of these creations: users start with no friends, no likes and no comments, and invest their time and skills into growing these numbers. More likes for a post is the equivalent of social recognition (Grosser 2014), similar to higher grades in school, or higher income levels; thus the online self-quantification could be a way of achieving online social status. One's social media account represents one's online social status, and

it is the only visible characteristic is one's digital self (Zhao, 2005). The digital self represents the image one wants to portray to others through the available online elements (Goffman 1959; Waskul 2003). Given that their physical self cannot be harmed online, self-quantifiers dedicate their efforts to protecting and fostering their digital self. Furthermore, because the wellbeing of the digital self can benefit from the nurturing environment offered by brand communities (through their more engaged and loyal members), users can associate the welfare of the community with the welfare of their digital self. We thus argue that our results showing a stronger brand focus for high self-quantifiers (vs. low self-quantifiers) are explained by self-quantifiers being able to satisfy their need to focus on their digital self via engagement in brand communities.

At the same time, our findings also show a strong self-focus for high self-quantifiers. This may be due to the benefits the increased brand focus has on self-quantifiers' digital self, resulting in a substantial overlap between self-quantifiers' brand focus and digital self focus. Indeed, while self-quantifiers are online, they seem to focus more on the brand community (and through symbiosis, on their digital self) than on their physical self.

Awe effect over brand versus self focus in self-quantifiers

While low self-quantifiers exposed to awe showed no significant change in their main focus (brand versus self), those with high self-quantification levels experienced a change that goes against the theory: they became more focused on self and less focused on brand. In the next section we are investigating possible theoretical explanations for this phenomenon.

The widely recognized effect of awe is that it induces feelings of smallness and reduces the focus on the self (Keltner and Haidt 2003; Valdesolo and Graham 2014). However, in our experiment, participants were already immersed in the digital environment when they were exposed to awe – which was generated using elements from the real nature. This may disrupt the digital experience, bringing self-quantifiers’ focus back on the real world, and reducing their focus on the digital self (and implicitly, on brand communities).

If seeing impactful images from the nature made the self-quantifiers focus more on their physical (than digital) self, it is understandable why they experienced low brand engagement and low behavioral intention toward the online brand. This raises an interesting speculation: what if awe would be generated using a brand related content that will keep the self-quantifiers immersed into the digital world? We suspect that this will have an opposite effect to the one identified in this research, and more in line with the initially proposed theory.

Theoretical Contributions

This work informs several novel theoretical insights. Overall, the research reported in this paper provides the first know empirical investigation of the effect of self-quantification on brand engagement on social media. Whereas several different motivations for social media engagement have been discussed in the literature, to the best of our knowledge, this is the first study to examine the way in which social media users that have a strong focus on metrics and an insatiable “desire for more” (Grosser 2014) engage with brands to satisfy their need for quantification.

First, we conceptualized the concept of self-quantification on brand community and developed a measurement scale that allowed us to explore theoretical relationships between this concept and several other constructs identified in the literature as antecedents of brand engagement: need for self-expression, need for socializing, bonding and impression management, need for information and entertainment, and social media content attractiveness. The results show appropriate levels of discriminant validity and serve to develop scholarly understanding regarding the nature of these specific conceptual associations.

Second, we developed and empirically tested a theoretical model that states a relationship of mediated moderation between quantification and brand engagement. We found that the relationship between self-quantification and engagement is mediated by users' focus on brand versus self (i.e., higher self-quantification leads to higher brand focus, which in turn results in higher brand engagement and behavioral intentions). Contrary to previous research that indicates that a high focus on quantification reduces the attention to the main activity (Etkin 2016) and increases the focus on "self," as people use metrics to shape their selves and personal worth (Grosser 2014), our findings point to a benefit to the brand of having a high level of self-quantification.

Furthermore, our investigation into the effect of awe on the relationship between quantification and brand engagement prompts deeper exploration of this emotion. Whereas previous research shows that awe may increase consumers' engagement on social media (Berger and Milkman 2012; Wang et al. 2018), we found the opposite effect. Awe decreased self-quantifiers' engagement with brand and behavioral intentions in the social media environment.

While the four studies used in this research did not all show the expected results, they helped in cementing, as well as challenging existing theories and became the foundation for a theoretical development that should lead to further improvement in this area.

Managerial Implications

To determine how our findings can be used in designing social media strategies, we should first note the breadth of applicability of our studies. The stimuli used in our research included both existing (i.e., Netflix) and fictitious brands (TopShow). This makes our findings applicable to consumers who are familiar with a brand, as well as those that are relatively new to a brand, as long as they are social media users.

Based on our findings and on the new theoretical developments, we propose several ways in which social media marketers could increase customer-brand engagement in online communities:

- (1) empowering customers by making them feel useful for the brand and the brand community, as empowerment has shown a positive association with self-quantification in our study;
- (2) increasing the level of self-quantification on brand platforms by offering more ways for users to show their accomplishments. Tools like level of influence, expertise, friendliness, approachability, and so on, can help users show off their online achievements, nurturing the self-quantification phenomenon on brands platforms. If marketers can increase the users' level of self-quantification by directing users' attention to social media metrics (e.g., likes, comments, shares, etc.) related to the brand-related activity in which they are asked to participate,

people will express a higher brand focus, which in turn will increase their brand engagement on social media and their behavioral intentions; .

(3) although previous research indicated some value in using awe-infused messages on social media, as they are more viral, our results suggest that brands may need to be cautious in using awe in their social media messages. Specifically, when awe is used in messages unrelated to the brand, it detracts users' attention from the brand-related activity, resulting in a decrease in the level of brand engagement.

Limitations and Future Research

Despite the contributions discussed above, this research is also subject to several limitations. First, future validation of the scale measuring self-quantification on brand community is required. While we examined several of antecedents of brand engagement discussed in the literature to test the discriminant validity of the scale, future researchers may wish to incorporate constructs such as need for information acquisition (Azar et al. 2016, Rohm et al. 2013) or impression management (Rohm et al. 2013) to further validate the scale.

Further, our research has examined the effects of self-quantification on brand engagement without pointing to a specific social media platform. Previous research indicates that, whereas Twitter is a quick way of sharing information, news, opinions, and details about daily activity, it may not be consumers' preferred venue for sharing brand belief information. In fact, Jansen et al. (2009) found that only 19% of tweets are brand-related, and in almost half of those cases, the brand is not the focal point of the post. Therefore, future research could investigate whether the results of our study can be

replicated on a variety of social media platforms, such as Facebook, Instagram, or Twitter.

With regard to self-quantification, most of the existing research has investigated the self-quantification process as it applies to health or body-related information, voluntarily tracked by subjects (Lupton 2012; Sharon 2017; Wang et al. 2016). However, self-quantification is a broader concept that refers to an extensive focus on quantifying one's own behavior and can occur both offline and in the online environment. Our research has focused on the latter, investigating the effects of users' focus on social media metrics on their engagement with a brand on the brand community platform. Future research can examine how a high focus on quantification in an offline environment affects people's use of social media in general, as well as their engagement with brands on brand online communities.

Another aspect worth examining is the possibility that self-quantification provides a way for consumers to rationalize the engagement with brands. Our last two studies show that, in a controlled environment, self-quantification is strongly related to brand engagement. Future research could investigate whether self-quantifiers acknowledge this symbiotic relationship and perceive their engagement with brands as a way of boosting their social media metrics.

Self-quantifiers tend to characterize their "self" through numbers (Sharon 2017) and rely on numbers to look competent to other online users (Chai et al. 2012). This reduction of a person to numbers displayed to others on social media may appear to be similar to the phenomenon of self-objectification, defined as people's tendency to "treat themselves as objects to be looked at and evaluated" (Fredrickson and Roberts, 1997, p.

177). Providing content such as pictures of one's face or body on social networking sites with the aim of acquiring validation through likes and comments is self-objectifying behavior, as it encourages individuals to consider and present themselves to be viewed and judged by others (Salomon and Brown 2019). Thus, self-quantification and self-objectification, although different concepts, seem to be similar with regard to the goal they seek (e.g., more likes, shares, and comments). Future research could benefit from exploring the relationship between use of social media to achieve self-objectification goals and consumers' engagement with brands on social media.

Further, our results related to awe are contrary to the previous findings in the social media literature, creating new venues for research for a better understanding of its on people's engagement with brands on social media. Our manipulation of awe was brand-unrelated, which might have disrupted people's brand-related digital experience, and thus led to people being less engaged with the brand compared to the situation in which awe was absent. Future research could investigate the effect of awe on the relationship between self-quantification and brand engagement if awe is generated using content that is brand-related, which will keep the self-quantifiers immersed into the digital experience.

Finally, working from home and social distancing during COVID-19 pandemic motivated people to become more connected and engaged using social media (Brough and Martin, 2020; Nabity-Grover et al., 2020). In addition, the COVID-19 pandemic has resulted in permanent behavioral changes by consumers, a reconsideration of who we are, what we care about, our relationship to the natural environment, and how we care for others (Zwanka and Buff 2021). It could have also resulted in a reevaluation of the self

through quantitative terms, thus resulting in a decrease in need for self-quantification.

Future research could investigate these issues just after the pandemic, and three to five years after (similar to Kennett-Hensel, Sneath, and Lacey [2012](#)).

APPENDIX 1

Scales used in study 1 and 2

Self-quantification on social media - adapted from Li et al., 2010 (study 1) 7 items, 1 component; Eigenvalue = 4.38; $\alpha = .90$	
<i>Please indicate to what extent you agree with the following statements about social media? (1=strongly disagree, 7=strongly agree)</i>	Factor loadings
It is important to me that the SM platforms I use have accurate tools for tracking all activity related to my posts (such as numbers of views, likes, comments, shares, etc.).	0.81
I regularly monitor the numbers related to my SM account (i.e., likes, comments, shares).	0.88
It is important for me to collect numbers related to my SM account on my behavior.	0.85
I constantly monitor the evolution of my posts (number of shares, comments, likes, etc.).	0.87
I analyze my SM account data regularly.	0.83
I pull down my post if it has few likes.	0.53
I post during times of days when I know I am getting most responses.	0.73

Self-quantification on brand communities - self developed (study 1)	
7 items, 1 component; Eigenvalue = 4.06; α = .88	
<i>Indicate to what extent you agree with the following statements about your participation in the SM brand community: (1=strongly disagree, 7=strongly agree)</i>	Factor loadings
I monitor the performance of my posts in this brand community (number of shares, comments, likes, etc.).	0.77
I post about topics I think will get the most responses.	0.75
When I post, it is important to me to get approval from many others.	0.82
I feel gratified when a post I agree with gets a lot of likes/responses.	0.69
I feel good about my posts in the brand community when I get lots of responses.	0.77
When I post, it is important to me to get feedback from the most influential people in the community.	0.76
If I care about the topic, it is important to me that a lot of people respond.	0.79
Items not included in the final scale:	
I will pull down a post in this community if other people do not respond to it.	
Getting information from the brand community is more important to me than getting likes [reverse coded].	
If I care about the topic, it does not matter whether other people respond [reverse coded].	
Getting entertainment from the brand community is more important to me than the number of responses [reverse coded].	
It does not matter to me if my posts in the community get noticed [reverse coded].	

Need for self-expression (study 1)	
6 items, 1 component; Eigenvalue = 3.13; α = .81	
<i>In general, when you are on social media sites, how often are you doing each of the following activities? (1=never, 7=always)</i>	
	Factor loadings
posting videos	0.75
posting photos	0.61
posting memes	0.67
sharing information about my interests	0.73
sharing my opinions	0.77
posting about brands	0.78

Need for socializing / bonding, impression management (study 1)	
6 items, 1 component; Eigenvalue = 3.48; α = .85	
<i>In general, when you are on social media sites, how often are you doing each of the following activities? (1=never, 7=always)</i>	
	Factor loadings
commenting on content created by others	0.73
debating with other people	0.68
talking to other people about my interests	0.79
talking to other people about their interests	0.82
asking for opinions	0.79
meeting new people	0.76

Need for information / entertainment (study 1)	
6 items, 1 component; Eigenvalue = 2.71; α = .73	
<i>In general, when you are on social media sites, how often are you doing each of the following activities? (1=never, 7=always)</i>	
	Factor loadings
liking posts	0.66
browsing content created by others	0.79
scrolling through images posted by others	0.78
reading the news	0.46
watching videos created by others	0.73
getting updates about personal interests	0.55

Content attractiveness (study 1)	
7 items, 1 component; Eigenvalue = 4.04; $\alpha = .88$	
<i>Indicate to what extent you agree with the following statements about your visits to social media brand community: (1=strongly disagree, 7=strongly agree)</i>	
	Factor loadings
I find the information in this brand community to be valuable.	0.79
I think this brand community is a valuable source of information.	0.77
There is unique information value posted in this brand community.	0.73
I think this brand page is very entertaining.	0.74
The content of this brand page is eye-catching and picks me up.	0.70
Conversations in this brand community make me feel excited.	0.79
Conversations in this brand community make me feel stimulated.	0.79

Brand-focus on social media - adapted from Baldus et al., 2015 (study 1&3)	
4 items, 1 component; Eigenvalue = 2.53; $\alpha = .79$	
<i>Please indicate to what extent you agree with the following statements about your visits to [user's preferred] social media brand community:</i>	
<i>(1=strongly disagree, 7=strongly agree)</i>	
	Factor loadings
I participate in this brand community hoping to improve the brand or product.	0.65
I participate in this brand community because I care about the brand.	0.86
Being part of this brand community allows me to be connected to the brand.	0.87
I feel good when I can help answer other community member's questions.	0.79

Self-focus on social media - adapted from Baldus et al., 2015 (study 1&3)	
4 items, 1 component; Eigenvalue = 2.52; $\alpha = .80$	
<i>Please indicate to what extent you agree with the following statements about your visits to [user's preferred] social media brand community:</i>	
<i>(1=strongly disagree, 7=strongly agree)</i>	
	Factor loadings
I participate in this brand community hoping to improve my online image.	0.81
I participate in this brand community because it helps me accomplish my goals.	0.74
Being part of this brand community helps me build my personal brand.	0.85
I feel good when community members pay attention to me.	0.77

Empowerment - adopted from Peterson et al., 2006 (study 1) 17 items, 3 components; first Eigenvalue = 7.93; $\alpha = .93$	
<i>Please indicate to what extent you agree with the following statements about your behavior on [user's preferred] social media brand community: (1=strongly disagree, 7=strongly agree)</i>	
	Factor loadings
I am often a leader in groups.	0.73
I would prefer to be a leader rather than a follower.	0.73
I would rather have a leadership role when I'm involved in a community project.	0.73
I can usually organize people to get things done.	0.73
Other people usually follow my ideas.	0.74
I find it very easy to communicate in the online community.	0.60
I like to work on solving a problem myself rather than wait and see if someone else will deal with it.	0.44
I like trying new things that are challenging to me.	0.59
I enjoy participation because I want to have as much say in my community as possible.	0.70
People like me can really understand what's going on with my community.	0.67
I feel like I have a pretty good understanding of the important issues which confront my community.	0.66
People like me have the ability to participate effectively in community activities and decision making.	0.70
My opinion is important because it could someday make a difference in my community.	0.72
There are plenty of ways for people like me to have a say in what our community does.	0.74
It is important to me that I actively participate in the online community issues.	0.74
Most community leaders would listen to me.	0.70
It is important to participate in many online activities.	0.63

Empowerment - adapted from Menon, 1999 (study 2) 4 items, 1 component; Eigenvalue = 2.78; α = .84	
<i>How much do you agree with these statements about your presence on Puma's online community?</i> (1=strongly disagree, 7=strongly agree)	
	Factor loadings
I see that I have some control in determining which T-shirts will be produced by this company.	0.89
I have some influence in determining which products will be sold by this company.	0.87
I have a say in Puma's decisions.	0.88
I would not have a voice in Puma's decisions [reverse coded].	0.67

APPENDIX 2

Self-quantification manipulation procedures

Self-quantification – Study 3

Respondents in the high SQ condition saw the following message:

“Imagine that someone who works for Netflix asks you to be a brand ambassador for your favorite Netflix shows on social media. She enlists your help letting people know about new shows you like using branded content posts on your personal social media pages. You would post about shows and tag Netflix. You would also post your opinions on social media pages related to your favorite shows that are operated by Netflix. You would be asked to post about shows in a way that stands out and gets responses from other social media users. Netflix keeps track of followers, comments, and likes on posts by their brand ambassadors that mention Netflix shows and shares these metrics with brand ambassadors. The rewards that brand ambassadors receive for posting about shows on social media depend on the responses they get to their posts about Netflix shows.”

Respondents in the low SQ condition saw the following message:

“Imagine that someone who works for Netflix asks you to be a brand ambassador for your favorite Netflix shows on social media. She enlists your help letting people know about new shows you like using branded content posts on your personal social media pages. You would post about shows and tag Netflix. You would also post your opinions on social media pages related to your favorite shows that are operated by Netflix. Netflix asks its brand ambassadors to mention Netflix shows on social media in five posts per month to earn rewards.”

Manipulation check questions for self-quantification (study 3) 4 items, 1 component; Eigenvalue = 2.91; $\alpha = .87$	
<i>Please indicate to what extent you agree with the following statements?</i> (1=strongly disagree, 7=strongly agree)	
	Factor loadings
If I served as a brand ambassador, Netflix would reward me based on the number of people who responded to my posts related to my favorite Netflix shows.	0.86
If I served as a brand ambassador, Netflix would reward me the same way regardless of the number of responses to my posts. [reverse coded]	0.81
If I posted about Netflix shows, the number of responses I generated would not matter. [reverse coded]	0.85
Netflix rewards its brand ambassadors if their posts about shows get a lot of comments and likes.	0.89

Self-quantification – Study 4

All respondents saw the following introduction:

“TopShow is a new Social media platform that encourages its users to write honest reviews for movies and TV shows, and to engage in discussions on related topics. For the purpose of this study, please imagine that you are a TopShow user, and you often post, ask, and answer questions related to your favorite movies or TV shows.”

Respondents in the high SQ condition saw the following message:

“In order to increase its popularity, the TopShow platform decided to reward its most active and influential users with 1,000 weekly vouchers that can be redeemed at most subscription streaming services. The 1,000 most active and influential users on TopShow are determined by an algorithm based on their weekly number of meaningful posts and comments they make, and the number of comments their posts generates. As a TopShow user, you can win a voucher by posting about your favorite [user’s choice of streaming service] shows, by commenting on other people's posts, or by generating intense conversations around a topic.”

Respondents in the low SQ condition saw the following message:

“In order to increase its popularity, the TopShow platform decided to randomly reward its users with 1,000 weekly vouchers that can be redeemed at most subscription streaming services. The weekly winners are determined by an algorithm that randomly selects 1,000 usernames out of the total users who were active that week. As a TopShow user, you can win a voucher by posting about your favorite [user’s choice of streaming service] shows, by commenting on other people's posts, or by generating conversations around a topic.

Manipulation check questions for self-quantification (study 4) 4 items, 2 components; first Eigenvalue = 1.86; α = .61	
<i>Please indicate to what extent you agree with the following statements?</i> <i>(1=strongly disagree, 7=strongly agree)</i>	Factor loadings
As a TopShow user, I could be rewarded by the platform based on the number of people who responded to my posts related to my favorite shows.	0.77
As a TopShow user, I could be rewarded by the platform the same way regardless of the number of responses to my posts. [reverse coded]	0.60
As a TopShow user, the number of responses I generated would not matter. [reverse coded]	0.63
TopShow rewards its users if their posts about shows get a lot of comments and likes.	0.74

APPENDIX 3

Awe manipulation procedure

Awe – Study 4

Respondents were exposed to 50 seconds video clips containing either awe-generating images (for those in the high-awe condition), or images taken from a National Geographic documentary presenting the life of the North American Bison.

Snapshot from the video saw in high-awe condition:



Snapshot from the video saw in low-awe condition:



Manipulation check questions for awe (study 4)
<i>Thinking back at the video clip you watched a few minutes ago, please report the degree to which you felt each of the following emotions: (1=not at all, 7=extremely intense)</i>
Amusement [the state or experience of finding something funny]
Happiness [the state of being happy, excited, or satisfied]
Awe [a feeling of reverential respect mixed with wonder]
Fear [an unpleasant emotion caused by the belief that something is dangerous]
Sadness [the condition or quality of being sad, sorrow, or unhappy]
Anger [a strong feeling of annoyance, displeasure, or hostility]
Disgust [a feeling of revulsion aroused by something unpleasant or offensive]

APPENDIX 4

Scales used in studies 3 and 4

Brand engagement on social media - (study 3 & 4), 5 items		
Study 3: 1 component; Eigenvalue = 3.50; $\alpha = .89$		
Study 4: 1 component; Eigenvalue = 3.59; $\alpha = .90$		
<i>If you were a [TV streaming service] brand ambassador, please describe your social media relationship with shows you like on [TV streaming service].</i>	Factor loadings	
<i>(1-to-7 scale, described below)</i>	S3	S4
(1)Very unlikely to follow ----- (7)Very likely to follow	0.84	0.77
(1)Very unlikely to comment ----- (7)Very likely to comment	0.87	0.85
(1)Very unlikely to tag ----- (7)Very likely to tag	0.80	0.88
(1)Very unlikely to engage with other- -- (7)Very likely to engage with customers other customers	0.87	0.87
(1)Very unlikely to post branded ----- (7)Very likely to post branded content content	0.81	0.87

Behavioral intentions toward the brand - (study 3 & 4) 5 items		
Study 3: 1 component; Eigenvalue = 2.72; $\alpha = .72$		
Study 4: 1 component; Eigenvalue = 2.87; $\alpha = .80$		
<i>If you were a [TV streaming service] brand ambassador, please describe your anticipated behavior related to shows you like on [TV streaming service].</i>	Factor loadings	
<i>(1-to-7 scale, described below)</i>	S3	S4
(1)Would watch less ----- (7)Would watch more	0.82	0.86
(1)Would recommend less ----- (7)Would recommend more	0.82	0.82
(1)Would be willing to pay less ----- (7)Would be willing to pay more to subscribe to subscribe	0.26	0.41
(1)Would decrease loyalty ----- (7)Would increase loyalty	0.78	0.82
(1)Would learn less about the ----- (7)Would learn more about the shows shows	0.83	0.79

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