# Quantified-Self Consciousness and Online User Behavior: from Circle Culture Perspective

**Wenjing Guo[1,a], Hong Jin[2,b,*]**

[1]School of Business, Jiangxi Normal University, No. 99 Ziyang Avenue, Nanchang, China

[2]School of Business, China University of Political Science and Law, 25 Xitucheng Road, Haidian District, Beijing, China

[a]202240100873@jxnu.edu.cn, [b]342944219@qq.com

*Corresponding author

**Keywords:** Quantified-self consciousness, User engagement, Online behavior, Circle characteristic, Arousal

**Abstract:** The concept of quantified self is deeply integrated into various facets of consumer life, offering both convenience and enjoyment while encouraging users to focus on their own well-being and optimize personal behavior. This, in turn, cultivates Quantified-Self Consciousness (QSC) among users. Despite its ubiquity, existing research on the definition of QSC and its impact on online user engagement remains incomplete, leaving businesses without a comprehensive understanding of user behavior in the context of quantified-self actions. Leveraging self-concept theory, this study employs both surveys and scenario-based experiments to explore the mechanisms through which QSC influences user engagement. Remarkably, we introduce circle characteristic as a moderating variable, which not only extends the applicability of circle characteristic in online user behavior studies but also provides businesses with insightful and culturally nuanced managerial guidance.

## 1. Introduction

The rise of technology and health awareness has mainstreamed the quantified self, influencing various life aspects from physical to social well-being. This trend is no longer confined to medical niches; it's a societal phenomenon [1]. The frequent exchange and visualization of personal data not only integrates it into everyday life but also fosters health and behavioral optimization. However, businesses are still exploring how this surge in Quantified-Self Consciousness (QSC) impacts user participation and its underlying mechanics. Existing research typically segments the quantified-self process into introspective and action stages, highlighting the former's significance. Our study fills a research gap by integrating a mediating variable based on self-concept theory, to better understand user behavior mechanisms from QSC to active involvement. We broaden the discussion to include Chinese circle culture, offering businesses innovative strategies to boost user engagement.

## 2. Theoretical Foundation

### 2.1. Self-concept Theory and Quantified-Self Consciousness

Self-concept theory, originated by James in 1890, identifies human self-perception in four aspects: material, spiritual, social, and pure selves [2]. This theory has been foundational in customer behavior research, further expanded by Sirgy to include actual and ideal selves, along with their social versions [3]. These dimensions guide purchasing choices and foster self-actualization, influencing ongoing engagement in quantified behaviors and social networks. The quantified-self serves two purposes: individual-level users use it to align their actual and ideal selves, while group-level users aim for social acceptance by projecting a positive image. Increasingly, QSC is becoming a key driver for public participation in both quantified activities and broader online marketing. Our

Copyright © (2023) Francis Academic Press, UK  DOI: 10.25236/ichess.2023.024

research seeks to understand the mechanisms through which QSC shapes user engagement, aiming for actionable insights into online marketing strategies.

### 2.2. User Engagement Behavior

User engagement behavior has long been an academic focus, with varying definitions and theories enriching the field. We adapt Ennew and Binks' categorization of customer participation behavior to delineate online user engagement into three dimensions: data exchange, accountable conduct, and interpersonal engagement [4]. Data exchange involves mutual data and idea exchange between users and service providers. Accountable conduct recognizes mutual obligations, and interpersonal engagement is characterized by trust, flexibility, and commitment. Research shows that QSC significantly influences user behavior; higher QSC levels are linked to increased activity in quantified-self communities and mobile social networks [5]. Using self-concept theory, we note that users' social selves are divided into actual and ideal components. Behavior is then modulated to align these two aspects, aiming to achieve an ideal social self.

### 2.3. Arousal

First identified by Cannon in 1914 as a mobilizing force during emergencies and later honed by Duffy in 1957 to denote readiness, the concept of arousal has undergone considerable transformation [6,7]. Evolving from a gauge of activated energy to a multi-faceted measure of psychological and physiological activity and wakefulness [8], its relevance in self-quantification remains underexplored. Our study adopts Russell's 1980 definition, zeroing in on how arousal galvanizes bodily resources and primes individuals for action.

### 2.4. Circle Characteristics

In cultures like China, "circles"—social networks tied by common interests—significantly influence individual attitudes and actions [9]. Essential for building user trust in the digital landscape, as exemplified by platforms like WeChat, these circles are the core of our study. Focusing on mobile social platforms, we explore how variations in circle attributes like tie strength, membership, and trust affect user behavior. Our research offers a unique angle by probing how the circle characteristics moderate the impact of user QSC on group participation.

## 3. Hypothetical Deduction

In quantified-self communities and mobile social networks, data exchanging helps users achieve an ideal social self-concept, offering benefits like improved social standing [1]and social capital [10]. Similarly, users often act responsibly to cultivate an ideal self-image, generating value for both organizations and themselves [11]. This accountable conduct enhances their community credibility. Lastly, interpersonal engagement is vital for user engagement, strengthening social bonds and shaping perceptions [12]. All in all:

H1: QSC positively affects user (a) data exchange, (b) accountable conduct, and (c)interpersonal engagement.

In the field of self-quantification, data aggregation elevates arousal, thereby affecting user engagement and offering fresh insights into the role of QSC in user behavior. Self-concept is a collection of one's self-views [13], and arousal, fueled by cognition, influences behavior through emotional states (He, 2008). Arousal catalyzes varied actions like impulse buying and information sharing [14,15]. In the QSC framework, arousal is triggered by data analytics, shaping participatory behavior. Hence,

H2: QSC positively impacts user (a) data exchange, (b) accountable conduct, and (c)interpersonal engagement via arousal.

Tie strength within social circles influences relationship intimacy and is pivotal for information sharing and trust [16]. Strong ties enhance interaction and loyalty [17], affecting user QSC and participation. Formally:

H3: Tie strength moderates how users' QSC impacts their (a) data exchange, (b) accountable

conduct, and (c)interpersonal engagement.

See Figure 1 for the specific model.

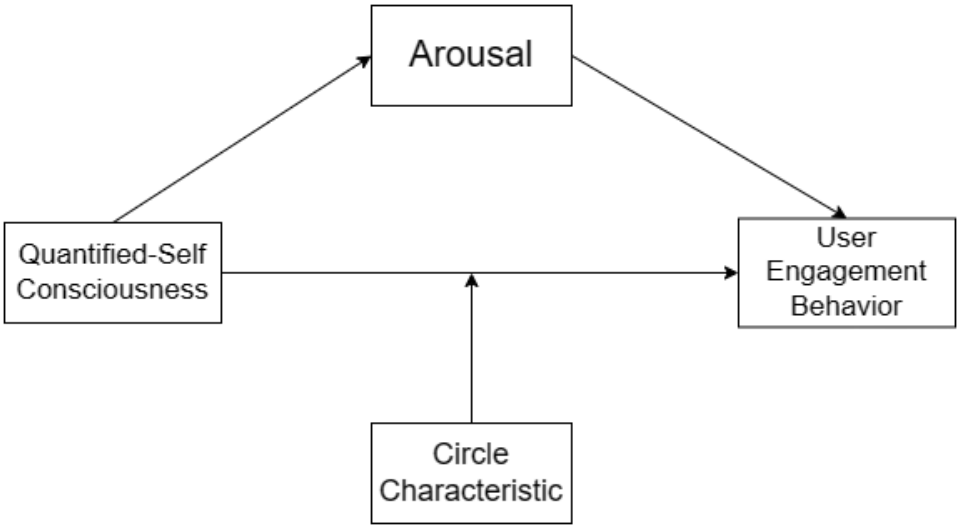


Figure 1 Research model.

## 4. Methodology

### 4.1. Study1

Study 1 employed a community-based online survey to validate our hypotheses, using SPSS 26.0 and AMOS 24 for data analysis. The study targeted the primary model effects and arousal's mediating role, confirmed through a structured questionnaire. The survey concentrated on a young, online quantified-self community, with a focus on Chinese university students. Hypotheses H1 and H2 received preliminary validation.

### 4.2. Study2

In Experiment 2 we used the scenario experimental method to verify the moderating effect of tie strength, and because of the importance and popularity of exercise and fitness apps, the exercise scenario was chosen as the experimental background. After setting up the experimental scenario, a 2×2 between-group design was used to randomly assign subjects. We will test the moderating effect of tie strength (H3) while replicating the main effect path.

## 5. Conclusion

The era of quantified-self has revolutionized online user engagement, compelling us to revisit traditional paradigms. Our research uniquely delves into the multidimensional impact of QSC on user engagement, leveraging self-concept theory to enrich current scholarly discourse. More critically, we upend the prevailing assumption that tie strength consistently moderates these dynamics. Our research will reveal that in the context of circle cultures, tie strength emerges as a defining characteristic that can override individual traits. In summary, our study provides a nuanced understanding of how QSC shapes user behavior in complex social ecosystems.

## Acknowledgements

This research was supported by the National Natural Science Foundation of China (Grant No. 71962014), the Fundamental Research Funds for the Central Universities, and the Research and Innovation Projects of China University of Political Science and Law (Grant No. 23ZFG79002).

## References


[1] Crawford, K., Lingel, J., and Karppi, T. (2015) Our Metrics, Ourselves: A Hundred Years of Self-Tracking from the Weight Scale to the Wrist Wearable Device. European Journal of Cultural Studies, 18, 479-496.

[2] James, A.R. (1980) A Circumplex Model of Affect. Journal of Personality and Social Psychology, 39, 1161-1178.

[3] Sirgy, J. (1982) Self-concept in Consumer Behavior: A Critical Review. Journal of Consumer Research, 9, 287-300.

[4] Ennew C.T, and Binks M. (1999) The Impact of Participative Service Relationships on Quality, Satisfaction and Retention. Journal of Business Research, 46, 121-132.

[5] Xiang, Z., and Fesenmaier, D.R. (2017) "Analytics in Tourism Design", Xiang, Z., and Fesenmaier, D. (Eds), Analytics in Smart Tourism Design. Tourism on the Verge, Springer, Cham, 1-10.

[6] Cannon, W.B. (1914) The Emergency Function of the Adrenal Medulla In Pain and the Major Emotions. American Journal of Physiology,33, 356 – 393.

[7] Duffy, E. (1957) The Psychological Significance of the Concept of Arousal or Activation. Psychological Review, 64, 265-275.

[8] Barrett, L. F., and Russell, J. A. (1999) The Structure of Current Affect: Controversies and Emerging Consensus. Current Directions in Psychological Science, 8, 10 – 14.

[9] Fei, X. (1998) From the Soil: The Foundations of Chinese Society, Beijing University Press, Beijing, China.

[10] Berger, J. (2014) Word of Mouth and Interpersonal Communication: A Review and Directions for Future Research. Journal of Consumer Psychology, 24, 586-607.

[11] Huang, J. (2017) The Effect of Crossover Marketing on Value Creation in Mobile Internet Environment. Chinese Journal of Management, 14, 1052-1061.

[12] Huang, M., Liao, J., and Zhou, N. (2015) Can Community Experience Lead to Brand Loyalty? A Study of the Effect and Mechanism of Different Experience Dimensions. Nankai Business Review, 18, 151-160.

[13] Malhotra, N.K. (1988) Self-Concept and Product Choice: An Integrated Perspective. Journal of Economic Psychology, 9, 1-28.

[14] Wu, Y., Xin, L., Li, D., Yu, J., and Guo, J. (2021) How Does Scarcity Promotion Lead to Impulse Purchase in the Online Market? A Field Experiment. Information and Management, 58, 103283.

[15] Niklas, P., Roja, R., and Arnd, F. (2022) Emotions and Virality: Social Transmission of Political Messages on Twitter. Frontiers in Psychology, 13, 931921.

[16] Granovetter, M.S. (1973) The Strength of Weak Ties. American Journal of Sociology,78, 1360 - 1380.

[17] Luo, J. (2012) Guanxi and Circles: Social Networks in China. Chinese Journal of Management, 9, 165-171+178.