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Framing Social Credit System: An Experimental Investigation of Social Credit System's Chilling Effect on Freedom of Expression

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Abstract

Studies on China's social credit system (SCS) remain mostly theoretical and there is limited empirical research examining the surveillance effect under China's SCS. This study investigates whether exposure to news framing of SCS affects individuals' attitude, political online behavior, and opinion expression. Findings suggest exposure to negative framing of SCS chills participants' intentions to engage in online political activities. Individuals who possess low levels of willingness to self-censor and are exposed to negative framing are more susceptible to the chilling effects of SCS, and thereby become cautious to share opinions, which in turn restricts their freedom of expression. Qualitative evidence reveals while most participants were supportive of SCS, yet still concerned about its privacy invasion and speech restriction issues. Implications for SCS as a means of surveillance are discussed.

Keywords: social credit system, framing theory, chilling effects, government surveillance, freedom of expression

Introduction

The Chinese government has long harnessed the power of algorithmic surveillance by establishing its Social Credit System (SCS), a government initiative released in 2014, which aims to assign a “social credit” score to every citizen by tracking their financial behavior, personal information, and online activity (Sithigh & Siems, 2019; State Council of the People’s Republic of China, 2014). While the mission of China’s SCS is to raise the awareness of integrity and the level of trustworthiness of Chinese society, SCS is widely criticized by the Western media as Orwell’s “Big Brother” since it utilizes a big-data surveillance governance to monitor, assess, and discipline citizens’ social, political, and economic behaviors (Hoffman, 2017a).

Studies on China’s SCS remain mostly theoretical and focus on the institutional and political-economic implications of SCS (Devereaux & Peng, 2020; Liang, et al., 2018), moral issues (Chorzempa, Triolo & Sacks, 2018), control information (Diab, 2017), social management (Hoffman, 2017a), and market implications (Meissner, 2017). There is very limited empirical research examining the effect of surveillance governance under China’s SCS. Moreover, Liang et al. (2018) argued that SCS as a complicated surveillance infrastructure only works on financial and commercial activities rather than political ones.

Previous research indicates digital surveillance tools have the power to chill political activities (Stoycheff, et al, 2018). Thereby, this study aims to assess whether news framing of China’s social credit system affects public opinion, political online behaviors, and freedom of speech. Theoretically, this study advances framing literature by extending theory into the context of state surveillance and investigates how exposure to news frames of SCS affects individuals’ evaluations and political online behavior. Additionally, applying chilling effects, the study provides practical implications regarding potential issues and concerns related to SCS as a means of surveillance.

Literature Review

[China’s Social Credit System](#)

China’s Social Credit System is composed of two distinct systems: one is still in the early pilot stages, monitoring individual behavior; the other is the Corporate SCS, a more robust national system for monitoring corporate behavior (Congressional Research Service, 2020; Schaefer, 2020). The SCS uses big-data collection and analysis to monitor, shape, and rate individuals’ behavior, which is part of a broader political control process known as social

management (Hoffman, 2017a). Beyond cultivating law-abiding and ethical behaviors in Chinese society and economy, the Chinese government employs SCS as a forceful tool of authoritarian resilience (Hoffman, 2017b; Jiang & Fu, 2018; Kostka, 2019; Liang et al., 2018).

SCS is built upon the principle of reward and punishment. When an individual engages in an untrustworthy behavior, the name and the social credit code of the person will be announced on the “blacklist”, along with details about the deed and the relevant legal sanctions; the trust-keeping people will be published on the “redlist” (Engelmann et al. 2019). By publishing redlists and blacklists, the government-run SCS is mandatory (i.e., targeting all citizens, social organizations, government agencies, and businesses in key industries) to ensure strict law enforcement and regulatory practice (Hoffman, 2017b; Knight & Creemers, 2021; Kostka, 2019).

The corporate SCS provides information and evaluations relevant to business activity, which is rated based on compliance, financial, and audit records (State Council of the People’s Republic of China, 2015). All companies registered in China have been assigned a Unified Social Credit Code, one unique business identifier across the different databases. As government departments collect information on firms, they establish “blacklists” of firms that either violate regulations or are engaged in illegal financial conduct, while rewarding consistent-compliant companies with economic incentives and public acclaim via “redlists” (Schaefer, 2020). The SCS manifests this logic by rating both business entities and citizens and creates a system whereby the compliance of citizens and businesses with laws is overseen, and their non-compliant behavior is subject to penalties (Creemers, 2018). The records that are gathered can be widely used by the authorities for a variety of purposes to encourage trustworthiness and punish untrustworthiness (Chen & Cheung, 2017).

SCS has received a large amount of media attention, but Western media considered SCS as Orwellian features of the system (Gertz, 2021), and warned of the advent of digital dictatorship for mass surveillance and social control (Botsman, 2017; Wong & Dobson, 2019).

Private Social Credit Systems

China has both private and government-run social credit schemes and the two growing programs differ substantially (Kostka, 2019). The more widely used SCSs are those established by private tech businesses (Creemers, 2018; Kostka, 2019) and are also referred to as the Consumer Credit Reporting System (Chen & Grossklags,

2020). To advance the development of a personal credit rating system, the Chinese government enlisted eight tech companies including Tencent and Baidu to allow them to establish and execute their pilot credit systems (Chen & Grosskalgs, 2020; Creemers, 2018; Hatton, 2015).

One of the most well-known pilot projects is Zhima Credit (also known as Sesame Credit), a private program operated by Ant Financial, an affiliate company of Alibaba, which runs like a voluntary “loyalty scheme” (Creemers, 2018, p.22), measuring customer trustworthiness based on five sets of information: financial credit records, behavioral trends in commercial transactions, available assets and personal information, preferences, and social relationships (Sithigh & Siems, 2019; Zeng, 2018). The types of products purchased are an important factor that Sesame Credit uses to rate individuals (Greenfield, 2018; Wong & Dobson, 2019). This implies that Sesame Credit may shape the purchasing behavior of Chinese citizens by nudging individuals toward responsible purchases (Greenfield, 2018; Ohlberg, et al., 2017) and these nudges attempt to encourage individuals to mimic the way they should behave (Jiang & Fu, 2018). Sesame Credit is separate from the national social credit system, voluntary to use, and only used for individuals, not businesses (Koty, 2019).

Yet, the relationship between these private SCSs and the governmental initiatives remains blurred and complicated (Creemers, 2018). While Sesame Credit does not directly penalize people for being untrustworthy (Botsman, 2017), Alibaba, as one of the private actors, employed the implementation of the blacklist scheme and is the first Internet-based company that the Supreme People’s Court has cooperated with to share its blacklist of debtors (Meng & Cao, 2015). The fear stems from the fact that commercial social credit systems may not merely encourage trustworthy behavior but prompt the question of whether Sesame Credit provides users’ transaction information to its partnered government bureaus (Ahmed, 2017). These discussions tend to be bedimmed by others in which Sesame Credit is prominent in partnering with the private sector to offer privileges and benefits to high score holders (Ahmed, 2017; Chen & Cheung, 2017), but the privacy concerns and risks linked with the commercial arm of the SCS are rarely examined in existing studies (Chen & Grossklags, 2020).

Privacy Concerns

SCS enables the Chinese government to integrate all the collected data on citizens into surveillance systems that continuously nudge toward compliance (Creemers, 2018; Wong & Dobson, 2019), and

the introduction of SCS by the Chinese state also generates concerns over data management and invasion of privacy. Privacy concerns particularly exist with private credit scoring programs. In early 2018, Alipay was accused of misleading users into disclosing their private information, which users, by default, gave the company permission to access consumers' customized reports and their credit rating on Sesame Credit (Zhang, 2018).

The introduction of digital surveillance technologies by the state is often considered a trade-off between privacy and security (Pavone & Esposti, 2012). Scholars have long yielded concerns that technological developments pose a potential threat to privacy (Brandeis & Warren, 1890), and argued that privacy constitutes an essential element of individual freedom (Schoeman, 1992; Waldman, 2015). Only a few studies examine citizens' attitudes and privacy concerns about SCS, and the findings of these studies are mixed. Specifically, Ahmed and Makagon (2017) reveal that Chinese citizens have doubts about the security of digital credit services and expressed discomfort with merging social and financial information. Ohlberg et al., (2017) find there is a lack of consensus on how information security and data privacy of SCS will be regulated at the regional and national levels. Kostka (2019) suggests that wealthier educated citizens tend to evaluate SCS from the viewpoints of its functions instead of data privacy. Chen and Cheung (2017) contend due to the lack of a sound and sophisticated legal system to protect privacy, the SCS can accumulate and scrutinize personal information for a variety of purposes, which undermines privacy. By analyzing privacy-related documents among 13 commercial SCS entities, Chen and Grossklags (2020) indicate privacy protection is deficient in China's private SCS.

Despite privacy concerns, SCS has received popular domestic public support (Schaefer, 2020). Kostka (2019) finds generally high approval rates for the SCS, with the highest approval rates among older, wealthier, better-educated citizens, who live in urban areas. Rieger and colleagues (2020) find Chinese college students have positive opinions on the SCS, but they are concerned about the risks of government surveillance. There is very limited research on acceptance of the SCS as Chinese users become more aware of their rights to privacy (Webster & Kim, 2018).

Framing Theory

Framing is a process through which news frames shape how people conceptualize an issue (Weaver, 2007). A frame is defined as a core organizing idea for interpreting real-time issues or events (Gamson, 1992; Gamson & Modigliani, 1989). Gitlin (1980) refers to framing as

a means to “organize the world both for journalists who report it and, in some important degree, for us who rely on their reports (p.7).” To frame is to highlight the salience of certain aspects of a topic (Entman, 1993). Framing research is characterized by a distinction between how news is presented, and how audiences make sense of and respond to these frames (Valkenburg et al., 1999). In other words, framing analysis focuses on identifying media frames in various news outlets and understanding the public’s perception of these modes of presentation (de Vreese & Boomgaarden, 2003).

Scholars contend that certain frames have inherent valence (Druckman, 2004). By valence, de Vreese and Boomgaarden (2003) contend “some frames are indicative of good and bad, and implicitly carry positive and/or negative elements (p.363).” News frames possessing such inherent valence to shape an issue as either good or bad can influence public opinion on such issue (Lecheler & de Vreese, 2012; Vliegenthart, et al., 2008). Participants in valenced framing studies were often exposed to a news story that either frames the issue in a positive or negative manner (de Vreese et al., 2011; Schuck & de Vreese, 2009). Exposure to valenced framing affects individuals’ attitudes by moving them in the direction aligned with the valence of the frame (Bizer, et al., 2011; de Vreese, 2004; Kananovich & Young, 2019; Liu, 2021). For instance, participants reading a news story that frames EU enlargement in a disadvantageous manner showed lower levels of support than participants exposed to advantageously framed news (de Vreese & Boomgaarden, 2003). Similarly, Liu (2021) finds that individuals exposed to good framing of governance issues express higher approval of government performance than bad framing. This study examines whether valenced framing of SCS influences individuals’ attitudes toward the SCS. Given prior research suggesting that exposure to positive framing of issues often increases more positive attitudes than negative framing (de Vreese et al., 2011), the study proposes the following hypothesis:

H1: Participants exposed to positive framing of SCS will hold more positive opinions on SCS than exposure to negative framing.

Chilling Effects Theory, Free Expression and Self-Censorship

The concept *chilling effect* was coined to the First Amendment of the US Constitution, referring to a phenomenon that threats of surveillance may deter people from making full use of their freedom of expression (Eide, 2019; Tsui, 2003; Wacker, 2003; Zhu & Fu, 2020). Schauer (1978) and Solove (2006; 2007) provide the theoretical frameworks for this phenomenon. Schauer (1978) considers the “very essence of a chilling effect is an act of deterrence

(p.689).” When fear, risk and uncertainty are built into regulations, laws and legal systems may deter citizens from exercising their rights (Penny, 2017). Such deterrence is caused by the fear of punishment or deprivation of governmental benefit (Schauer, 1978). Solove is informed by the surveillance studies (Lyon 2001; 2006) and builds on Schauer’s narrative to involve considerations about how privacy issues associated with government surveillance and data gathering can form a climate of risk and self-censorship (Penney, 2017).

Extant studies on SCS investigate whether people change their behavior to influence their social credit assessments (Kostka & Antoine, 2020). When examining how Chinese citizens adjust their behavioral responses to private and government SCS initiatives, Kostka and Antoine (2020) find most participants changed their behavior such as altering shopping behavior and following traffic regulations. People who participated in a government-run SCS pilot changed their behavior in more ways than people who were part of a commercial SCS (Kostka & Antoine, 2020). However, less research examines whether the positive and negative framing of SCS can encourage or chill individuals’ online political behaviors.

SCS utilizes a combination of rewards and punishment to steer the citizens’ behaviors and benefits from SCS tend to become the main incentives to shape citizens’ behaviors (Jiang & Fu, 2018; Kostka & Antoine, 2020). Botsman (2017) calls such a reward system “gamified obedience” that nudges individuals into preferred behaviors. Behavioral approach system that regulates approach motivation and goal-directed behavior to attain rewards (Gray, 1982) can explain the rationale behind the reward system relevant to SCS. Behavioral approach system uses positive reinforcement to process cues associated with rewards and induces active behaviors (Gray, 1982). Specifically, SCS produces behaviors that conform to the norm by rewarding desired behavior (Hansen & Weiskopf, 2020). Prior research indicates surveillance may elicit a political chilling effect (Penney, 2017; Stoycheff, et al., 2018). Perceptions of government surveillance can chill intentions to engage in online political activities (Stoycheff, et al., 2018). Thus, such chilling effect would occur when participants read the negative framing of SCS. The following hypothesis is posed:

H2: Exposure to negative framing of SCS will chill participants’ intentions to engage in political online activities than exposure to positive framing.

Prior studies on chilling effects revealed that government surveillance discourages speech and access to information and knowledge on the Internet (Penny, 2016; Stoycheff, 2016). The monitoring technologies also cause writers and journalists to self-

ensor what they search for (PEN American Center, 2013). Nevertheless, the relationship between surveillance and individuals' behavior may be more nuanced than "a blanket silencing (Stoycheff, 2016, p.11)."

SCS is part of the Chinese state's broader plan to develop its social management strategy by governing through "a feedback loop, a cycle of shaping, managing, and responding (Hoffman, 2017b, p.2)." Kostka (2019) contends that mechanisms of positive and negative reinforcement related to SCS intend to establish a disciplinary society where citizens are constantly involved in self-monitoring and adjustment of their behavior like Foucault's Panopticon (1977). Such a succession of control techniques to shape obedient and loyal citizens' behavior is vital to the survival of a state (Foucault, 1991), as is shown in China's SCS (Wong & Dobson, 2019). Panoptic-like surveillance has been found to violate citizens' rights to privacy (Bernal 2016) and chill individuals' political discussions (Stoycheff et al., 2018). SCS can generate a deterrence effect via announcing the blacklists and reporting punishment in state media (Drinhausen & Brussee, 2021).

Scholars studying chilling effects theory often explore whether certain regulatory actions may discourage or chill one or more activities, such as speaking, searching, and sharing content online (Penny 2016; Stoycheff, et al., 2018; Zhu & Fu, 2020). The behavioral inhibition system can be used to understand the neuropsychological mechanism behind the chilling effect (Fox et al., 2005; Gray, 1982; Yan et al., 2010; Zhu & Fu, 2020). Behavioral inhibition system predicts restrained behavior due to processing cues such as punishment (Gray, 1982). Negative perceptions of SCS may activate a cue of punishment among individuals and inhibit their behavior of self-expression on social media. The joint punishment system in SCS will deter people from engaging in activities of expression that are deemed sensitive. Self-censorship refers to a tendency for communication apprehension motivated by the perception of a hostile climate of opinion (Hayes, et al., 2005). A chilling effect is inherently a form of self-censorship (Büchi, et al., 2022) and individuals who consider they are under surveillance may preemptively self-inhibit free speech (White & Zimbardo, 1975). Based upon the evidence of how chilling effects may promote inhibition and conformity by encouraging individuals to be cautious while engaging in certain activities online (Penny, 2017), the study proposes the following hypothesis:

H3: Willingness to self-censor moderates the relationship between exposure to SCS frames on cautiousness of opinion expression.

Given the Chinese government and the national media have been

continuously promoting positive stories about the SCS and described SCS as a means to address social and governance problems (Ohlberg, et al., 2017; Knight & Creemers, 2021), and initial research has provided preliminary evidence that citizens positively support SCS (Kostka 2019; Rieger et al., 2020), thus, the study also examines individuals' attitudes toward SCS and asks the following research question:

RQ: How do participants make sense of and evaluate the current SCS?

Methods

Sample and Procedure

To investigate the hypotheses, an online experiment was embedded in a Qualtrics questionnaire in early November of 2019. The study's participants were recruited via Wenjuanxing (www.sojump.com), a professional online survey platform in China. Participants needed to reside in China and be at least 18 years old to be eligible to take part in this study.

Upon agreement to participate, respondents were asked to indicate their frequent use of commercial SCSs and willingness to self-censor. Then, they were randomly assigned to one of two conditions: positive framing versus negative framing of SCS.

For the condition of positive framing of SCS, participants were exposed to a Xinhua news story about how China published a list of certain serious dishonest persons on the website of "Credit China" and able to promote honest dealings in society and enhance social transparency. This stimulus was intended to prime participants to the benefits generated from SCS and cultivate positive perceptions of SCS.

For the condition of negative framing of SCS, participants were exposed to the other Xinhua news story about videos posted by teenagers on short video apps or sites that will be monitored, and citizens' online words and deeds will be linked to personal credit. Similarly, this stimulus aimed to prime participants to generate negative perceptions of SCS.

After reading the news story, participants were subsequently asked about their opinions of SCS, the likelihood to engage in political online activities, and their cautiousness of expression on social media. An open-ended comment box was provided for participants to further elaborate in a follow-up question on their opinions toward SCS.

Initially, 741 participants were randomized to two different

experimental conditions and completed the study. However, 387 participants were excluded because they failed to correctly answer the two attention check questions. Thus, 354 participants were recruited for the study.

Manipulation Check

The following questions were used to assess the success of the experimental manipulations.

News story topic. Participants were asked to select the news topic they read during the study. Three answer options were provided: (a) the “Credit China” website published a list of untrustworthy persons to promote trust in society, (b) videos posted on TikTok will be monitored and linked to credit scores in the social credit system, or (c) neither. Results of a chi-square analysis indicated participants successfully identified the topic of the news story they read, $X^2(3, 354) = 335.08, p < .001$.

Framing of SCS. Participants were asked to assess the SCS discussed in the news story among one of the three answer options: positive, neutral, and negative. An independent-sample *t*-test showed that participants in the positive framing condition ($M=2.97, SD=.18$) reported higher scores and considered the SCS in the news story more positively than those in the negative framing condition ($M=1.03, SD=.17$), $t(352) = 103.5, p < .001$.

Given that 1.1% of participants failed to identify the topic of the news story, those participants were excluded. A total of 350 Chinese adults were included for further analysis after data cleaning. According to a priori power analysis by G-Power, the minimum number of participants needed to achieve adequate statistical power was 128 (effect size $f=.25$, α error probability=.05, power=.8; Cohen 1992). The resulting sample ($N=350$) was 52.9% female, 79.7% college-educated, 56% living in Eastern China, with an average age of 29.5. Meanwhile, 31.4% of participants were self-reported as Chinese Communist Party members. About 55% of participants reported their monthly income is above 5000 RMB.

Measurement

Willingness to self-censor was adapted from Hayes et al. (2005) and examined the extent to which participants are willing to withhold their true opinion from others. Participants were asked to rate their agreement with six statements from 1=strongly disagree to 7=strongly agree. A sample statement read: “It is difficult for me to express my opinion if I think that others won’t agree with what I say.” ($M=4.53, SD=.10$, Cronbach’s $\alpha=.81$).

Public Opinion of Social Credit System was adapted from Kostka (2019) and assessed with six items on 7-point Likert scales ranging from strongly disagree to strongly agree. This measure included promoting integrity, improving the social credit environment, improving the credit standard system at the national and local levels, creating a healthy online community, being useful, and being trustworthy ($M=5.92$, $SD=.66$, Cronbach's $\alpha=.73$).

Political Online Behavior was adapted from Stoycheff et al. (2018) and evaluated on 7-point scales ranging from "very unlikely" to "very likely". This measure used two items, including sharing political opinions online, and searching for information about politics and foreign issues on social media. ($M=4.48$, $SD=1.27$, Cronbach's $\alpha=.60$).

Being Cautious of Opinion Expression was created for this study based on previous research (Gil de Zúñiga, et al., 2014; Zheng & Pan, 2016) and assessed with four items on 7-point Likert scales ranging from strongly disagree to strongly agree. A sample item read: "I need to be cautious when sharing opinions on social media," ($M=5.80$, $SD=.88$, Cronbach's $\alpha=.78$). Through Exploratory Factor Analysis (EFA), all four items were loaded with a single factor that explained 60.6% of the variance with factor loadings from .592 to .726. The average variance extracted (AVE) for the construct is 0.60, and the composite reliability (CR) is 0.86. According to Fornell and Larcker (1981), the average variance extracted, which is used to measure the discriminate validity of the contrast is acceptable when it is higher than 0.5.

Frequent Use of Commercial SCS was a covariate, adapted from Kostka (2019) and evaluated with four items on 7-point scales ranging from never to always. This measure asked participants how frequently they used the commercial social credit system such as Sesame Credit, Tencent Credit, Credit Union and Juxinli¹, ($M=3.69$, $SD=1.27$, Cronbach's $\alpha=.71$).

Membership of the Chinese Communist Party (CCP) asked participants whether they were a member of the CCP, 1=Yes, and 0=No, ($M=0.31$, $SD=.47$).

Results

To first ensure random assignment accounted for all meaningful differences between the two experimental conditions, independent-samples t-tests and chi-square were conducted and revealed no significant differences in both conditions in terms of participants' demographics.

To test H1, a one-way analysis of covariance (ANCOVA) was conducted with framing SCS as the independent variable, public opinion of SCS as the dependent variable, frequent use of commercial SCS, and party membership as covariates. Results showed that there was no significant relationship between valenced framing of SCS and public evaluations of SCS, $F(1, 346) = 2.05$, $p = .153$, $\eta_p^2 = .006$, rejecting H1. Neither use of commercial SCS, $F(1, 346) = .95$, $p = .329$, $\eta_p^2 = .003$, nor party membership, $F(1, 346) = 3.27$, $p = .071$, $\eta_p^2 = .009$, was significantly associated with the outcome variable.

The same process was used to test H2. A one-way analysis of covariance (ANCOVA) test showed that valenced framing of SCS influences individuals' political online behavior, $F(1, 346) = 4.94$, $p = .027$, $\eta_p^2 = .014$. Participants who read negative framing of SCS ($M = 4.37$) yielded less likelihood of engaging in online political activities than participants in the positive framing condition ($M = 4.64$), supporting H2. Both the use of commercial SCS, $F(1, 346) = 72.52$, $p < .001$, $\eta_p^2 = .173$, and party membership, $F(1, 346) = 7.93$, $p = .005$, $\eta_p^2 = .022$, were significantly associated with political online behavior.

H3 proposed willingness to self-censor moderates the effects of framing SCS on cautiousness of opinion expression. Because willingness to self-censor is a continuous variable, and inappropriate dichotomizing of continuous data can produce spurious significant results (Fitzsimons, 2008), the study used the Hayes (2013) PROCESS Macro and the Model 1 template with 5,000 bias-corrected bootstrap samples and 95% confidence intervals (CIs) to test this moderation hypothesis with party membership as a covariate. Statistical significance ($p < .05$) is achieved when lower bound (LL) and upper bound (UL) CI do not include zero. Conditions for the moderator (willingness to self-censor) are the mean ± 1 standard deviation from the mean.

The overall model for framing SCS is significant $F(3, 345) = 9.68$, $p < .001$, $R^2 = .10$, as well as the interaction between framing SCS and willingness to self-censor $b = -.27$, $t(345) = -2.98$, $p = .003$. The conditional effects of framing SCS on willingness to self-censor for cautiousness of expression is stronger for participants' willingness to self-censor by one standard deviation below the mean [$b = .49$, $t(345) = 3.80$, $p < .001$] compared to those at the mean [$b = .22$, $t(345) = 2.36$, $p = .019$] and above the mean [$b = -.06$, $t(345) = -.43$, $p = .67$]. The covariate party membership is significantly associated with the outcome variable, $b = .19$, $t(345) = 1.98$, $p = .049$. Specifically, the interaction pattern shows that participants with low levels of willingness to self and exposed to negative framing of SCS became the most cautious of expressing opinions, followed by

participants with moderate and high levels of willingness to self-censor, as shown in Figure 1.

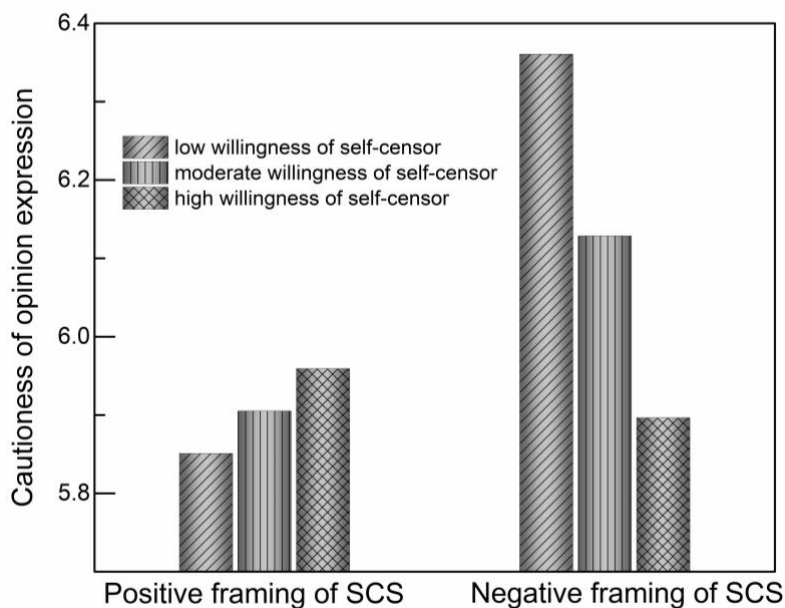


Figure 1. The interaction effect of framing SCS and willingness to self-censor on cautiousness of opinion expression

RQ asked participants to elaborate their opinions of SCS in an open-ended follow-up question. In total, 342 of the 350 were valid responses to the open-ended question with 8 participants writing no opinions on SCS. The valid response rate for the open-ended questions was 98%. To analyze the data, thematic analysis was performed to explore the main topics covered in participants' responses. The author began by first coding and then searching for recurring themes and sub-themes within the data. Although the study intended to compare themes between participants reading positive framing of SCS and being exposed to negative framing of SCS, the analysis demonstrated a high level of similarity between the two conditions.

Thus, the study was able to identify two essential themes. The two themes include a) very positive view of and strong support for SCS, and b) limited negative opinions on and distrust of SCS. Specifically, within the overarching theme of positive opinions, the study identified benefits generated from SCS (e.g., healthy online environment and social development) as two sub-themes. As for the distrust of SCS, concerns over the system's intrinsic nature (e.g., privacy concerns and free speech restriction) as two separate sub-themes.

Positive opinions about SCS. The qualitative evidence reveals that Chinese citizens evaluated SCS through positive frames (Kostak, 2019). Most participants expressed strong support because they considered that SCS generated many benefits, including raising the publics' awareness of trust, building a trustworthy and rule of law

society, deterring people with poor credit from involving in dishonest activities, combating fake news and online fraud, promoting stable governance, and maintaining a healthy online environment.

Positive opinions of SCS were evident when participants noted that SCS was beneficial for maintaining a healthy digital media landscape. One participant noted, “SCS is effective in combating internet fraud and preventing online bullying, trolling, and harassment.” Some participants also expressed favorable perceptions due to SCS’s deterring effect in curbing cybercrime, the spread of online rumors, and fake news. For example, some participants said that “the current online environment is filled with misinformation, internet fraud, and cybercrime. SCS should be supported and promoted to improve and protect online security.”

Furthermore, participants expressed strong support by addressing SCS encourages citizens’ trustworthy behavior, which is beneficial for social stability. For instance, one participant noted that “I supported SCS because it helps raise citizens’ awareness of trustworthiness, which is beneficial to social and economic development.” Therefore, most participants showed favorable perceptions of SCS by acknowledging the various benefits and societal changes generated by SCS.

Limited negative views and distrust of SCS. Despite having strong support for SCS, only a few participants indicated they distrusted SCS. One participant stated, “I do not trust SCS because it cannot guarantee fairness and integrity. One weakness is its potential manipulation and abuse of the credit reporting system, which easily can bring convenience to some people.” Likewise, the other participant noted, “SCS is incomplete...some people with credit problems can take loans, buy houses...high consumption must be restricted among those people...they have to pay off their debt.” Another revealed, “SCS exerts limited impact because it lacks public participation, and its societal influence is insufficient.” These negative perceptions were tied to skepticism of fairness and integrity in SCS.

A few participants attributed their distrust and skepticism to their concerns over the system’s intrinsic nature, including privacy protection issues, and third-party data breaches. One participant wrote: “SCS plays a positive role in improving the credibility of the people but publishing the list of dishonest people involves privacy issues.” Another participant shared similar concerns, “if SCS cannot strictly protect data collection and use of personal information, it may influence personal privacy.” Along with these concerns, one participant stated, “it is hard to implement SCS ...many details such as how to supervise, prevent third-party data breaches, and protect

privacy need to be taken into consideration.” In addition to privacy concerns, a few participants expressed concerns over freedom of expression. One participant questioned, “SCS may discourage people from speaking the truth or silence different voices.” Thus, participants associated their concerns with the notion that SCS in the early stage has not fully developed, and many deficiencies exist in the current system.

Discussion

The study advances prior research on the surveillance of SCS by integrating both framing theory and chilling effect. Using an online experiment that frames the surveillance of SCS in a positive and negative manner, results suggest negative framing of SCS chills intentions to engage in political online behavior. Participants with low levels of willingness to self-censor and exposed to negative frames are susceptible to the chilling effects of SCS, and thereby become the most cautious to express opinions, which in turn restricts their freedom of expression.

The finding that positive framing did not increase positive evaluations of SCS as compared to the negative framing contradicts valenced framing literature that exposure to positive framing can move individuals’ attitudes in the direction consistent with the valence of the frame (de Vreese, 2004). Two perspectives may explicate this finding. The first factor may be attributed to social desirability bias, which leads some participants to hide their true opinions due to political fear, reflecting the challenge of conducting public opinion research in China (Tang, 2005).

Second, while the study did not find valenced framing effect on participant’s evaluations of SCS, H1 revealed strikingly favorable views of SCS in both positive ($M=5.98$, $SD=.64$) and negative framing ($M=5.88$, $SD=.67$) conditions, which likely resulted in a ceiling effect. Such ceiling effect could be attributed to the news source in the stimulus, Xinhua News, an official state-owned news agency of China. The highly positive opinions reflect state media’s success in favorably reporting and portraying the SCS, and certain participants may be vigilant in answering policy-related questions. This finding is consistent with prior studies that Chinese citizens hold highly positive appraisals of SCS (Kostka, 2019; Kosta & Antoine, 2020; Rieger et al., 2020). The qualitative evidence lends further support that most participants had an overall positive perception of SCS, were aware of and only discussed the varying benefits provided by SCS. Consistent with Kostka (2019), the strong support among the participants indicates the government utilizes a powerful instrument to maintain positive impressions of SCS and provides

little room for public debates on privacy issues. Public concerns over intrusive data collection, data management, and invasion of personal privacy (Drinhausen & Brussee, 2021; Reuters, 2020) are less discussed in state media. Therefore, more research is needed to document whether news framing of SCS is from a non-state-owned commercial media may lead to different results.

The study suggests negative framing of SCS suppresses intentions to engage in online political activities as compared to positive framing, which is consistent with prior research about government surveillance chills online political behavior (Penney, 2017; Stoycheff, et al., 2018). This finding is significant in that it not only illustrates valenced frames are capable of influencing individuals' behavioral intentions but also suggests that going beyond financial and commercial activities (Liang, et al., 2018), SCS can shape and steer the behavior of Chinese citizens in the fields of online political activities. In other words, commercial SCS like *Sesame Credit* can assist in shaping the purchasing behavior of Chinese citizens (Greenfield, 2018), but analyses of enormous data will allow the government to predict citizens' future social and political behavior (Creemers, 2017; Thomas, Crook, & Edelman, 2017; Wong & Dobson, 2019).

In light of the ongoing debate over China's SCS for monitoring and shaping citizens' behavior (Creemers, 2018; Elkin-Koren & Gal, 2018; Rieger et al., 2020; Síthigh & Siems, 2019), one notable finding in this study is the moderating role of willingness to self-censor, where participants who were least likely to self-censor and exposed to the negative condition of SCS are more susceptible to the chilling effects and become judicious of opinion expression. This finding indicates there is the existence of negative occurrences of SCS' chilling effects online and offers insights into how certain people, especially individuals who were less willing to self-censor, are more likely to be chilled and refrain from discussing certain topics on social media, which may lead to less sharing and speech. As Solove (2006) claims that surveillance exacerbates self-censorship and inhibition, due to its inhibitory effects, awareness of the negative consequences of SCS may cause the non-self-censor individuals to alter their behavior. Participants who were self-reported as a member of CCP were found wary of their opinion expression. These findings suggest that SCS can serve as a tool of social control, enhancing the power of social norms, shaping the act of compliance, and stifling free expression (Creemers, 2018; Hoffman, 2017a).

The current study also examines how individuals make sense of SCS. Despite highly favorable views, many concerns and questions remain open with SCS. Specifically, some participants expressed

concerns over privacy invasion and information security. Because the state media often adopt positive frames to describe SCS, privacy protection, and speech restriction issues might be undermined and overlooked (Chen & Cheung, 2017). With state and commercial SCS having increased their capabilities to monitor people, only a few participants questioned how to hold them accountable. These findings suggest that designers or technical experts of SCS should recognize public concerns over data collection, privacy protection, and potential constraints on freedom of expression because a lack of transparency and understanding of how data management functions under SCS may lead to feelings of skepticism or resignation. Therefore, the government and commercial entities must be accountable for fairness and transparency when aggregating users' data or sharing users' data with third parties (Van Dijck, 2014).

The findings have important implications regarding SCS as a state surveillance infrastructure. Theoretically, the study extends the understanding of valenced framing and chilling effects into the context of SCS and provides nuanced insights into the international fears and concerns that go beyond social credit, namely SCS may be employed to chill and restrict people's freedom of expression (Chorzempa et al., 2018), and modify the behaviors of Chinese citizens that are in line with the Chinese government's agenda (Kostka & Antoine, 2020; Li et al., 2019). Given behavioral inhibition theory (Zhu & Fu, 2020) and chilling effects (Townend, 2017), the study reveals SCS has a detrimentally restrictive effect on freedom of speech. The perceptions of negative consequences of SCS provoke cues of uncertainty and punishment among individuals, which inhibits the exercise of their right to free expression.

Negative outcomes of SCS may lead to conformity and anticipatory obedience. Chinese citizens may not only lose the possibility of their rights to free speech and privacy but also may try to conform or adjust to a specified behavior to avoid punishments (Jiang & Fu, 2018; Liang et al., 2018). As SCS is gradually developing into a potentially compelling amplification mechanism for the enforcement of laws and regulations (Creemers, 2018) and entrenches further into individuals' digital lives, the government may use SCS as a powerful means of mass surveillance to stifle political dissent (Vanderklippe, 2018) given the relatively low-cost (Kosta, 2019). As Schneier (2015) stated, chilling effects on legal and democratic activities, online or offline, are an astute force for obedience and are detrimental to political discourse, which results in "extrinsic losses of freedom" (Nissenbaum, 2009, p.75). Particularly, the punishment system featuring in SCS refrains people from opinion expression and may even inhibit lawful activities such as free speech. This undercuts the

restricting role of SCS in suppressing online opinion expression, societal participation, or political advocacy, and systematic monitoring of data may provoke a diffuse sense of being constantly watched, potentially discouraging people from engaging in even socially desirable behavior (Büchi et al., 2022).

Some limitations are worth noting. The measure of public opinion on SCS in general did not differentiate between government schemes and commercial systems. Query about the frequent use of SCS only taps in commercial systems. Future research could incorporate questions on how often people use the government-run SCS and examine whether they perceive the two systems differently due to discrete aims and operations. Second, the study relies upon self-reported behavioral intentions and is susceptible to social desirability biases, a limitation that has been minimized with the use of open-ended questions. The present study utilized a nonprobability sample, and any generalization of the findings is limited. Future studies may expand analysis by using quotas matching the Chinese population. As China deployed exceptional surveillance measures against coronavirus, more research is needed to explore how SCS aids in the state's efforts to contain the coronavirus pandemic (Knight & Creemers, 2021).

Notes.

1. On September 10, 2020, Juxinli, a well-known third-party service company, announced that it ceased its “crawler” business or credit rating service, which grabs consumers’ internet information (e.g., purchase and payment history) and stores it in its database to analyze and form a comprehensive evaluation of the borrowers for financial institutions to make relevant decisions (Jiang & Liu, 2019).

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