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Principal Investigator ： 首席研究員：	Dr ZHANG Xinzhi 張昕之博士
Institution/Think Tank ： 院校／智庫：	Hong Kong Baptist University 香港浸會大學
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Hong Kong Media's Coverage of Political Polarization and its Effects on People's Political Attitudes and Behaviors

香港媒體對「政治極化」的報導及其對市民政治態度和政治參與之影響

(Project No.: 2020.A2.043.20C)

FINAL REPORT

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Submitted by **Dr Xinzhi ZHANG (Principal Investigator)**

Assistant Professor and Programme Director,

Department of Journalism, School of Communication and Film,

Hong Kong Baptist University

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Research Team

Dr. Xinzhi ZHANG

Principal Investigator, Assistant Professor and Programme Director, Department of Journalism, School of Communication and Film, Hong Kong Baptist University

Ms. Wenshu LI

Ph.D. Candidate, Department of Communication Studies, School of Communication and Film, Hong Kong Baptist University

Ms. Hiu Yan PING

Research Assistant, Department of Journalism, School of Communication and Film, Hong Kong Baptist University

Ms. Yuanyuan CHANG

Research Assistant, Department of Journalism, School of Communication and Film, Hong Kong Baptist University

研究團隊成員

張昕之博士

項目主持人， 香港浸會大學，傳理與影視學院，新聞系， 助理教授

李文舒

團隊成員，香港浸會大學，傳理與影視學院， 傳播學系， 博士候選人

平曉欣

團隊成員，香港浸會大學，傳理與影視學院， 新聞系，研究助理

常媛媛

團隊成員，香港浸會大學，傳理與影視學院， 新聞系，研究助理

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Executive Summary

1. Abstract

Background. Hong Kong is witnessing unprecedented political polarization. People of different political viewpoints are clashing and unlikely to start civil and rational discussions. An informed and active citizenship is as essential as mutual respect and deliberation. Previous studies have revealed an increasing presence of political polarization in news stories worldwide. Using a conflict frame, news stories depict how various political camps use uncivil discourse to attack each other and show no compromise. While such coverage may be newsworthy and gain the public's attention, it may also produce unintended effects on political attitudes and behaviors. People may feel that their political viewpoints are challenged in an intolerant society. They may be motivated to protect their political stance, resulting in a higher level of polarization, reinforcing existing political views, and becoming even less tolerant of other opinions. Furthermore, such divisive political attitudes lower the willingness to collaborate with a civic organization from political outgroups for civic action and trigger intentions to take political actions only aligned with their own political ideas.

Research Questions. The current project answers two questions: first, how news media in Hong Kong cover political conflicts; second, to what extent and through what psychological mechanisms such media coverage affects people's political attitude, civic engagement, and political participation.

Data and Methods. The present project conducted two studies. The first study is informed by the theoretical outline of the news frame and political incivility. It is a content analysis of news articles on political conflicts published in Hong Kong local newspapers from 2010–2020 (n = 965) to examine different types of conflict frames (i.e., featuring political attacks and political incivility among political actors). The second study is informed by the theory of psychological reactance. It is a population-based online survey experiment in

Hong Kong (n = 1065) used to examine how news stories' source-level (e.g., communication channels) and message-level (e.g., partisanship of the informants involved in the conflict and level of polarization) factors influence people's news engagement, political attitudes, and public engagement. The present study focuses on three issues that have triggered public debates: housing problems; immigrant rights; and the legality of same-sex marriage.

Results. The content analysis found that nearly one-third of the news stories contain at least one type of incivility when covering the political conflict. The survey experiment found that people respond to messages differently when message sources vary. People demonstrated a lower level of perceived freedom threats when the social media recommendation algorithm suggested the messages. Sponsored messages produced the highest negative communication effects. The study found limited evidence that the sourcing informants' partisanship in the news would elicit emotional responses. The study also found that a perceived freedom threat would trigger reactance, which would lead to a greater level of perceived polarization and attitude polarization. The effects of polarization on public engagement are limited.

Implications: The present project offers insights on: (1) how news media can offer an informed and balanced representation of the political situation in Hong Kong; (2) identifying effective communication tactics to reduce reactance and polarization; and (3) designing communication messages, online and offline channels, and educational campaigns to create constructive communication channels among people with differing political viewpoints.

1. 摘要

背景。香港社會正經歷著前所未有的政治極化。持不同政治觀點的人們正在發生各類衝突，不傾向於展開文明理性的討論。對於一個良好運行的社會而言，積極活躍的公民與相互尊重的審議一樣重要。先前的研究表明，世界各地的新聞報導中的政治分化和激烈衝突越來越多。 新聞報導使用「衝突框架」來描述了不同政治陣營如何使用不文明的話語相互攻擊並且表現出彼此不妥協。雖然此類報導具有新聞價值並獲得公眾的關注，但也可能對大眾的政治態度和行為產生意想不到的影響。人們會覺得自己的政治觀點在一個不寬容的社會中受到了挑戰。他們有衝動去保護自己的政治立場，從而加劇了社會分化，對其他觀點的容忍度更低。此外，這種對立的政治態度降低了與持不同意見者的組織合作開展社區服務的意願，並引發了僅與自己的政治理念一致的人一同參與政治表達的意圖。

研究問題。本研究旨在回答兩個問題：第一，香港的新聞媒體如何報導政治衝突；第二，這種報導在多大程度上、通過什麼樣的心理機制影響了人們的態度與行為。

數據和方法。本項目進行了兩項研究。第一項研究以新聞框架和政治不文明的理論大綱為基礎。這一項研究是對 2010 年至 2020 年香港本地報章（ n = 965 ）刊載的關於政治衝突的文章的量化內容分析，以研究不同類型的衝突框架， 包括

行動者之間的攻擊和不文明的表達。第二項研究援引社會心理學中「逆反心理」理論，在香港 (n = 1065) 進行的一項在線調查實驗，檢視新聞報導的消息來源渠道和新聞中的被採訪對象的黨派特徵，以及新聞正文的語言風格如何影響人們的新聞參與度、政治態度和公眾參與。本研究聚焦於三個目前在社會上有爭議的議題：住房問題、移民權益、以及同性婚姻。

結果。內容分析發現，近三分之一的新聞報導在報導政治衝突時至少包含一種不文明的表述。調查實驗發現，當消息來源不同時，人們對消息的反應也不同。當社交媒體推薦算法推送消息時，人們感知自由受到威脅的水平較低。「贊助」的消息產生了最高的負面傳播效果。研究還佐證了傳播「逆反心理」的理論，即當人們感知到自由意願被威脅時，會引發負面情緒，從而導致更高水平的態度極化。兩極分化的情緒對公眾參與的影響則有限。

啟示。本項目從以下方面提供見解：(1) 媒體機構如何能夠以知情和平衡的方式反映香港的政治局勢；(2) 設計有效的溝通策略以減少情感極化；(3) 在不同政治觀點的持份者之間建立建設性的溝通渠道。

2. Layman summary on policy implications and recommendations

The present project explores the possibility of establishing constructive and deliberative public communication among different social groups, public sectors, and citizens from a socio-psychological and media effects research perspective. Results have five policy implications on potential strategies to reduce polarization in the society.
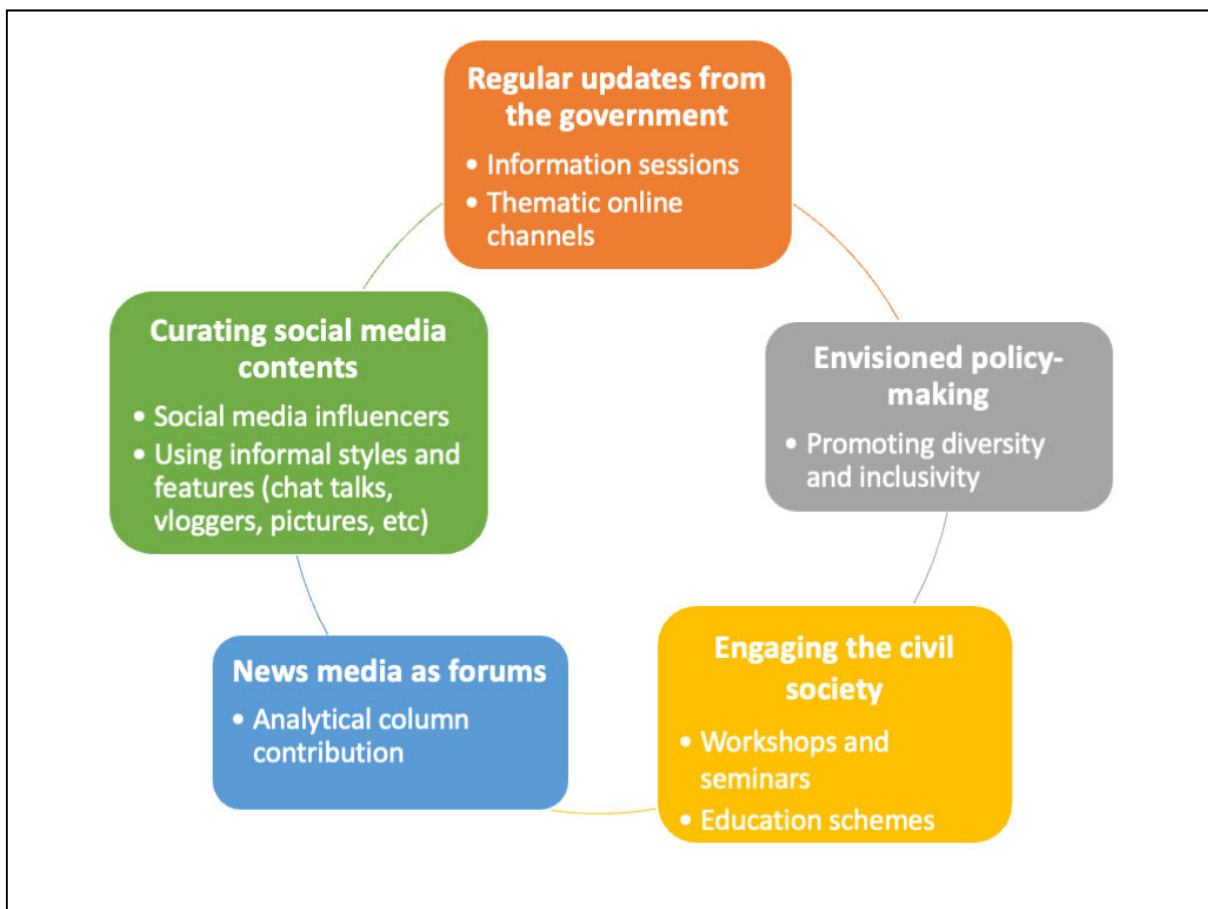
Policy recommendation 1. We suggest that the government and public sectors offer regular updates to the public for enduring policy issues (such as the land and housing issue). A long-term public communication strategy will provide more transparency and for the public to better understand the problem (such as its history, development, and difficulty) and understand the government's efforts and progress in solving the issues.

Policy recommendation 2. The policy-making can be envisioned to address potential future controversies related to the emerging policy issues.

Policy recommendation 3. The government can engage civil society to develop workshops and education schemes. We believe non-governmental actors (civic groups and professional organizations) are influential communicators to provide analytical insights rather than presenting or lamenting the polarization. They can design and implement various educational schemes, such as workshops, seminars, and educational campaigns.

Policy recommendation 4. News media can be regarded as a forum for analytical debates and opinion sharing. We recommend that the government and policymakers consider discussing and explicating policies in news media via forum or column contributions to maximize the impacts.

Policy recommendation 5. More content creation and curation can be made on social media. The current project argues that social media is an important channel and a communication intermediary. We recommend that the government and policymakers consider establishing and curating their own social media accounts, and delivering contents via social media influencers, such as professional social media channels, fan pages, online forums. The deliverables can include short videos clips introducing the scientific and historical facts of the policy matters, informal chat shows or talk shows (using colloquial language during the debates, even including some degrees of conflicts), "vloggers," and pictures blogs. These informal communication channels can serve as a common ground, a deliberation channel, with more vivid communication modalities.

More detailed elaboration of each of the above can be found in **Section 5**.

2. 政策建議概要

　　本項目從社會心理學和媒體效應研究的角度探索在不同社會群體、公共部門和

公民之間建立建設性和協商性交流的方案。 我們提出以下五個方面的政策建議。
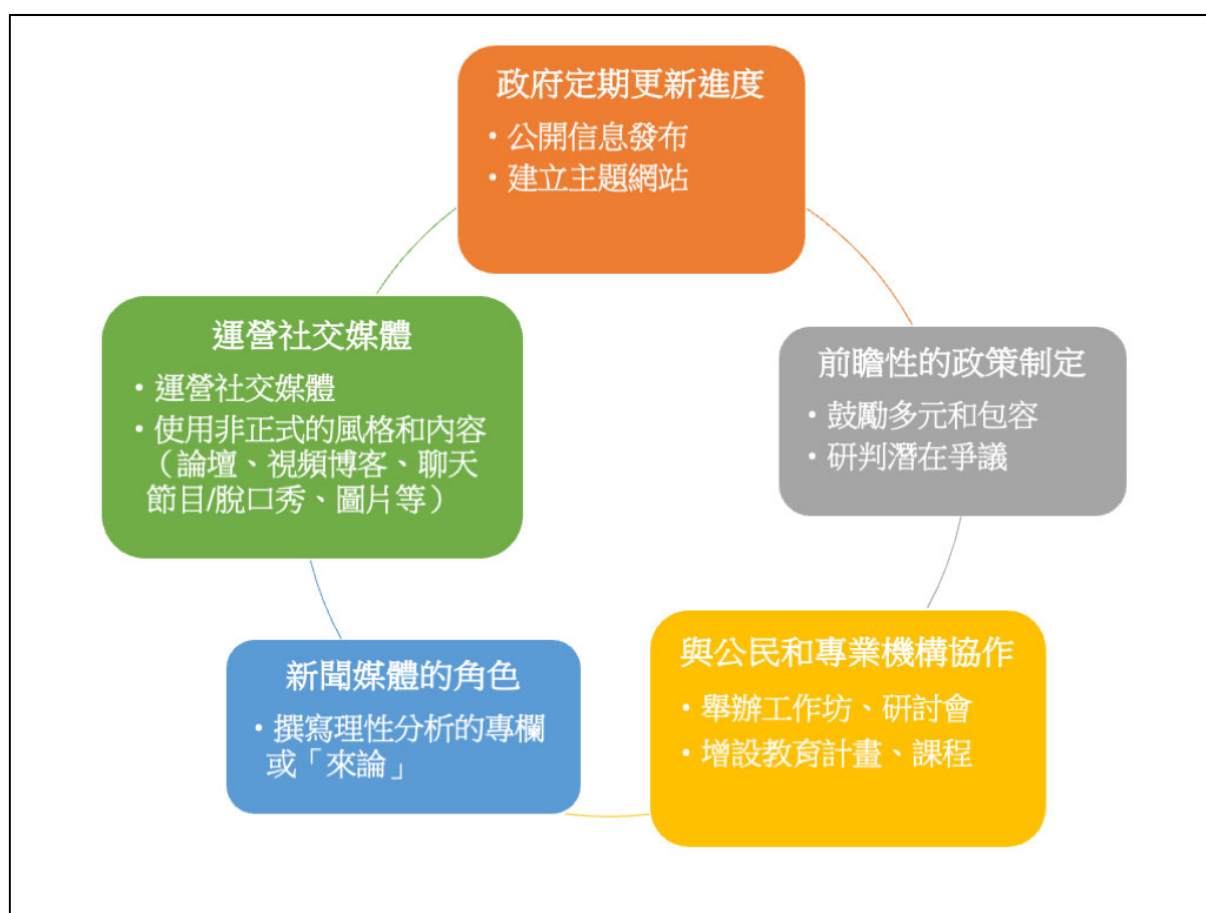
　　建議一： 政府和公共部門定期向公眾提供有關長期政策問題的最新信息。長

期、持續的公眾溝通策略將提供更高的透明度，讓公眾更好地了解這類問題的歷史、

沿革、現狀以及困難之處，了解政府在解決問題方面的作為和最新進展。

　　建議二：政府和公共部門可以更加具有前瞻性，制定清晰的政策以應對未來可

能出現的、與新出現的問題以及潛在爭議。

建議三：政府和公共部門可以讓民間社會參與製定研討會和教育計劃。我們相信非政府機構（如公民團體和專業組織）是有影響力的傳播者，他們可以提供分析見解，而非僅僅哀嘆兩極分化。 他們可以設計和實施各種教育計劃，例如研討會、研討會和教育活動增進公眾對相關議題的了解， 分享解決方案。

建議四：新聞媒體可以作為辯論和意見分享的論壇。 我們建議政府和政策制定者考慮通過論壇投稿或專欄來討論和解釋政策，擴大傳播效應。

建議五：我們的研究發現社交媒體是一個重要的信息傳播渠道和各方溝通的中介。 我們建議政府和政策制定者在社交媒體上進行更多內容策劃和創作。政府和政策制定者可考慮創建社交媒體帳號，以及培育社交媒體意見領袖對內容進行精心運營，例如運營具有專業操守的社交媒體帳號、粉絲頁面、在線論壇。 信息的表現形式可以包括短視頻片段（比如介紹填海工程的科學原理和歷史資料）、非正式的聊天節目或脫口秀（使用通俗的語言進行辯論，甚至展現一定程度的衝突）、「視頻播客」和圖片博客。 這些非正式的溝通渠道可以作為一個各方都可以參與的審議辯論渠道，不失為一種更生動的溝通方式。

我們在 **第 5 節** 中對上述各項政策建議提供了更為詳細的說明和執行方案。

1. Introduction

"Nowadays when the society is highly politicized, people from different ideological groups are filled with anger and hatred. They are not willing to listen to each other and not willing to express themselves but only clash and clamor."

---- Chan Yuen-han, a former member of Hong Kong Legislative Council and the founding member of the Democratic Alliance for the Betterment and Progress of Hong Kong (a large pro-establishment party), wrote a commentary on Feb 19, 2016, for *AM730*, a Hong Kong free press.

"The social disparity is a very sad and dangerous situation."

---- Eddie Tam, Chief Executive Officer of the Central Asset Investments and Management, responding to an interview on July 12, 2019 on the *MingPao Daily News*, an elite newspaper in Hong Kong.

As seen from the above two quotes form the news media, the level of political polarization in Hong Kong has become unprecedentedly high. Starting with the 2014 Umbrella Movement, the summer of 2019 witnessed the largest and the longest-lasting period of social unrest since the 1997 sovereignty handover. People holding different political viewpoints are clashing and are unlikely to start civil and rational discussions. An informed and active citizenship is equally as important as mutual respect and deliberation. Situated in the line of the global study of political polarization, the present study investigates how news media cover social and political polarization in Hong Kong; and the extent to which media coverage of political conflicts influences Hong Kongers' acquisition, processing, and engaging with the news messages, and how media coverage of political conflicts influences

Hong Kongers' political attitudes and political engagement. The study is motivated by two major lines of academic inquiry and related work.

1.1. Media Coverage of Political Polarization

(1) Political Polarization as a Conflict Frame. The present study examines news media's frames when reporting political polarization and political conflicts. It focuses on: (a) the use of a conflict frame in covering political attacks; and (b) the use of incivility.

In societies where politics are polarized, political polarization is often narrated in the news media (Fiorina, Abrams, & Pope, 2005). In the US, the news media cover several aspects of political disagreement, such as individuals who hold opposing ideas never compromising nor communicating with each other, and/or how political elites from different parties are intolerant of each other and attack each other in an uncivil manner (Levendusky & Malhotra, 2016). However, media coverage might be biased, because the media are strongly associated with partisanship. The message source and message feature (e.g., tone, presentation) will be influenced by the party inclinations of the informants being covered. It is crucial to document "media's role in describing the country as deeply divided along partisan lines" (Levendusky & Malhotra, 2016, p. 296).

Framing theory and conflict frames (Bartholomé, Lecheler, & de Vreese, 2018; Kim & Zhou, 2018; Scheufele, 1999) offer a theoretical framework for news media's coverage of political polarization. It is common to find political conflict and disagreement accompanying or underlying discussions of polarization (Fiorina & Abrams, 2008). When conflict and disagreement between political actors have high news value and attract the public's attention (Price, 1989), too much conflict reporting may present a simplistic disagreement, rather than complex and substantive political debates (Semetko & Valkenburg, 2000).

(2) Political Polarization as Incivility. Incivility is defined as an unnecessarily disrespectful tone (Coe, Kenski, & Rains, 2014); it is an extreme form of polarized expression that includes disrespectful statements, attacks, or insults toward an opposing political party and/or its members (Hwang, Kim, & Huh, 2014). Coe, Kenski, and Rains (2014, p. 661) operationalize incivility in terms of five primary forms: name-calling, aspersion, accusations of lying, vulgarity, and pejorative speech.

Existing literature is less sufficient on the extent to which these different forms of incivility appear on news media, which covers political polarization and/or features political conflicts or disparities involving political actors. Incivility is common in reports on political matters. For example, the term "outrage" involves constructs related to incivility, such as insulting language, name-calling, misrepresentative exaggerations, and ideologically extremist language. Some studies have documented how political figures initiate political conflict, as well as who the targets of political conflicts are, and which issues trigger the most controversies. Kenski, Filer, and Conway-Silva (2018) suggested that accusations of lying are an important form of incivility and undermines the potential for deliberation, negotiation, and compromise, as it can exacerbate political tensions, cause distrust, and shut down ongoing discourse through credibility attacks.

After reviewing the above literature, the present study focuses on two aspects of representation of conflict frames:

(a) "*What* is the conflict" - The issues and non-compromise actions among the political actors. It focuses on the issues involved in the personal attacks, and the extent to which political actors demonstrated non-compromise and disagreement among each other.

(b) "*How* the conflict is expressed" - The use of incivility. The use of uncivil discourse is likely in the media coverage of political conflict. "Discussing polarization to increasingly include more examples of uncivil discourse about the other party (such as rude

and disparaging remarks about the other side" (Levendusky & Malhotra, 2016, p. 284). As aforementioned earlier, political incivility is an extreme form of polarized expression that includes disrespectful statements, attacks, or insults toward an opposing political party and/or its members (Coe, Kenski, & Rains, 2014; Hwang, Kim, & Huh, 2014). The present study focuses on the extent to which the related news stories contain insulting or disparaging messages, such as accusations of lying, profanity, or belittling language (Bartholomé et al., 2018).

1.2. The Psychological and Political Effects of Exposure to Political Polarization

The present study investigates to what extent and through what psychological mechanisms the news media coverage of political disparity affects people's civic and political outcomes. When an article is published by news media about social and political polarization, readers may interpret the news differently, based on their political characteristics. Taking the two quotes in the beginning of this section as examples, when Legislator Chan and Director Tam made the above public statements, it was unclear how the audience perceived their words. Further, it was unknown if the audience would be willing to listen to the advice, or if they would act against such calls to "ease social tensions" by agreeing to listen to those who hold different political viewpoints. Related studies have found that media coverage of a polarized society will lead to a negative attitude towards political entities and government policies, and negative attitudes, source derogation, affective polarization, and extremity of attitudes on issues; however, the psychological mechanisms and behavioral intentions have not yet been tackled. To what extent will extreme attitudes towards the issues involved trigger people's political engagements behaviorally—be it peaceful political expression and/or radical political actions?

The present project explores the possibility of establishing constructive and deliberate public communication among different social groups from a socio-psychological perspective. The major theoretical framework used herein is the psychological reactance theory. The theory of psychological reactance explains how exposure to media messages containing persuasive messages can cause negative cognitions (Brehm, 1966; Brehm & Brehm, 1981; Miller et al., 2007; Quick et al., 2015; Shen & Dillard, 2014). In a polarized society, most political commentaries and campaign messages use polarization as an example of uncivil and uncompromising behavior: they either refer to polarization as a problem that should be addressed, or they use polarization to attack the political opposition. Such accusations are likely to generate reactance in those who hold a different political viewpoint. With reactance, people may strengthen their existing political viewpoints and be less likely to remain open-minded. Media's depictions of polarization can enhance such tendencies.

The present project will bridge the line of study on the impact of media coverage of polarization with psychological reactance and will examine the effects of media. It examines the following factors that may explain people's reaction towards the news stories covering political conflicts.

(1) The level of polarization presented in the news. Levendusky and Malhotra (2016) found that the level of polarization featured in the news has an influence on (negative) emotions. When viewing party polarization, people may get a feeling that their current political stance is challenged by others and that they are being forced or manipulated to change their existing political stance (Ma et al., 2019). Hence, messages depicting a high level of political conflict make people feel pressure from people holding different political viewpoints; and messages containing elements of conflict—such as political attacks among the politicians and the usage of uncivil language—are more likely to trigger reactance than messages depicting a consensus of different political stances.

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(2) The message sources. The study focuses on two types of message sources. The first is the news sources, i.e., the sourcing informants depicted in the news stories. News sources may generate different levels of reactance to the audiences. In the case of highly-divided ideological political communication, as explained by Kim and So (2018, paragraph 1): "reactance is…likely…if fatigued audiences attribute their threatened freedom to a specific message source responsible for the message with an explicit persuasive intent." Research has shown that political persuasion can create psychological reactance or "backlash" effects, in which the psychological pressure of persuasion causes people to reject the (attempted) persuaders' information, or to adopt hostile or negative views about the persuaders (Matland & Murray, 2013; Meirick & Nisbett, 2011). Research has also found that being the target of political persuasion during interpersonal discussions can create psychological reactance and ultimately lead individuals to avoid cross-group discussion, which might lead one to becoming close-minded and polarized (Kwak, Lane, Lee, Liang, & Weeks, 2018). Therefore, an informant with a partisanship bias in the context of political polarization will make people feel that they are being forced to follow the party inclinations of the sourcing informant, and thus may potentially threaten their freedom to act according to their free will.

Another message source in the present study that may cast psychological and political affects is how the message is brought to the readers on social media. Social media is one of the most important channels for people to acquire, process, and engage with political information. People receive political information on their social media timeline via different sources, such as shared by someone they know or endorsed by other communication actors. These sources include system recommendation (e.g., the "Suggested for you" by the Facebook content recommendation algorithms), peer (social) recommendation (shared by a second-order social connection), and sponsored by the communicators (e.g., "Sponsored" on

Facebook or "Promoted" on Twitter). People may denigrate the credibility of a news story if they feel the news is sponsored, as it may dampen the professional and public aspect of unbiased news media (Haigh, Haigh, & Kozak, 2018). An emerging line of the study also found that people may be more acceptable to messages communicated via the social media system—such as an algorithm recommendation or chatbots—than from other sources (Zarouali, Makhortykh, & Bastian, 2020). The present project explores whether different message sources appearing on social media would influence people's reaction towards news stories on social media.

(Note: The PI is grateful for the valuable suggestion made by two reviewers, who both strongly advised to add the social media factor into the study. The PI agreed with Reviewer #1: "to consider the desirability of including social media in the study" and Reviewer #4, who believed that, "a major and more impactful source of information and communication on the present study is social media that are more relevant in disseminating partisan and polarized information and opinions in this digital age." Missing the role of the "social" aspect of message dissemination would lead to a partial and incomplete understanding of the actual situation on the phenomena of political polarization communication in Hong Kong. Given the fact that political marketing and social media promotion are gaining ground, including the social media factor as the message source, will not only generate greater external validity of the experiment, as it is close to the actual news coverage or information found in the new online platform, and test the participants' psychological reactance and levels of polarization. It will enrich the policy implications on how to effectively communicate messages in the digital media environment).

1.3. Reactance and Consequences

Perceived threats to freedom will trigger reactance (e.g., Quick et al., 2015; Shen, 2015) and plenty of studies have suggested that reactance will generate other attitudinal and behavioral effects. The present study examines the extent to which reactance will trigger three dimensions of the polarization, including: (1) perceived polarization: a perceived gap among the political actors; (2) attitude polarization (also called attitude extremity), or a tendency to hold their existing stance on the issue; and (3) affective polarization, or a hostility toward people who hold different political viewpoints.

Finally, the present study focuses on whether the three types of reactance-evoked polarization would lead to civic activities or political activities. Civic activities require collaboration among the participants despite their party inclinations (e.g., fund raising for civic groups). Political actions, on the other hand, may involve a clear political stance. Since polarization involves non-compromise among political camps, it is hypothesized that polarization will lead to more political activities (may reinforce existing political views) and will decrease the likelihood of joining civic activities (being irrelevant to political partisanship and contributing to the public good).

1.4. The Role of Issue Type

Inspired by the literature on opinion formation, the present project follows Gearhart and Zhang (2018), and Zhang (2020), by adopting three types of issues:

(1) *enduring* issues, which have captured public attention for a long time and include national defense, health care, and gun control (Gearhart & Zhang, 2018);

(2) *emerging* issues, which involve recent events that have begun to draw increasing attention from the media and the public, with recent examples including abortion, AIDS, surrogacy, and same-sex marriage (Gearhart & Zhang, 2018); and

(3) *transitory* **issues**, which involve "political and social issues, which reemerge alongside elections, political shifts, and diplomatic affairs" (Gearhart & Zhang, 2018, p. 4).

In the Hong Kong context, the cases in the present study will be Hong Kong's housing problem (an enduring issue), same-sex marriage (an emerging issue), and Hong Kong's immigration policy (a transitory issue).

1.5. Political Polarization in Hong Kong Media: Actors and Issues

In Hong Kong, the political climate is polarized and fragmented. After the sovereignty handover in 1997, tensions between Hong Kong and mainland China began to intensify, resulting in a division between pro-democracy and pro-establishment groups (Chen, 2018). These include periodical large-scale demonstrations (Lee & Chan, 2011), the Umbrella Movement in 2014 (Lee & Chan, 2018), the social unrest starting in June 2019 (Lee et al., 2019); and numerous forms of non-event-based, elite-challenging political participation that occasionally take place (Zhang & Lin, 2016; 2018).

Lai (2007) argued that the Hong Kong press caters to the ideological interests of different political groups. They often clearly differ in stance, partisanship, and attitude, although they all claim to be objective and impartial (Feng, 2017). Only limited research has described the political polarization in Hong Kong. Despite the unprecedented political division in ideology, related research is underdeveloped.

Taken together, the current project proposes that when people perceive more reactance, they will perceive a more polarized opinion among different political groups, demonstrating more extreme attitudes, and having a higher level of affective polarization. The present study also explores the extent to which these political attitudes will lead to more public engagement—participating in civic and political activities.

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1.6. Research Questions and Research Hypotheses

After the above review, the present study proposes these research questions and research hypotheses:

For the analysis of news stories, the present study asks three questions:

RQ1: How do news media in Hong Kong cover the polarization—i.e., how do those featuring the political polarization relate to the different categorizations of incivility?

RQ2: Who are the informants expressing polarization? Who are the most frequently featured as the targets being accused of being responsible for the political polarization?

RQ3: To what extent does the media coverage of political polarization differ across media aligned to different ideological groups?

To examine the psychological and political consequences of conflict-laden news stories, the present study proposes the following research hypotheses:

H1: News stories featuring a higher level of political polarization will generate higher levels of perceived freedom threat than news stories featuring a lower level of polarization.

H2: News stories with different message sources will generate different levels of perceived freedom threat.

H3: A perceived freedom threat is positively related to psychological reactance.

H4: Psychological reactance is positively associated with a greater level of perceived polarization.

H5: Psychological reactance is positively associated with a higher level of attitude polarization.

H6: Psychological reactance is positively associated with a greater level of affective polarization.

H7: Perceived polarization is (a) positively associated with political participation and (b) negatively associated with civic participation.

H8: Attitude polarization is (a) positively associated with political participation and (b) negatively associated with civic participation.

H9: Affective polarization is (a) positively associated with political participation and (b) negatively associated with civic participation.

Lastly, to test the above relationships in different issue types, the project asks:

RQ4: To what extent do the relationships stipulated in H1–H9 differ across issue types?

Figure 1 reports the framework on the hypothesized relationships among the constructs.

[Figure 1 is here.]

2. Objectives of the study

1. To examine the extent to which Hong Kong's news media cover political polarization, including a variety of social disparities, political conflicts, and political disputes;

2. To examine the news sources and informants, political actors, and political parties involved, as well as the discourse and issues in the coverage of political polarization;

3. To examine how exposure to media coverage of political polarization leads to psychological consequences and consequent political attitudes and political engagement;

4. To understand how Hong Kongers respond to messages concerning several important but controversial issues related to societal wellbeing of Hong Kong, namely: (1) the housing policy, (2) the issue of same-sex marriage, and (3) the immigrant policy.

5. To explore the most effective messages that promote civil and rational communication, not only in the three example cases but in all civic and political matters.

3. Research Methodology

3.1. Study 1: Content Analysis

News Articles. The keywords "social disparity" could be used to identify relevant news articles published in 2010-2020. The search was conducted in July 2021 via the WisersOne database via the Hong Kong Baptist University. WisersOne is an electronic database providing text-based content from newspapers, magazines, journals, and newswires in the Greater China region, including mainland China, Hong Kong, Macau, and Taiwan.

A total of 1,032 news articles were found. After removing irrelevant articles (for example, political polarization was addressed in a passing reference; news not about Hong Kong; or news not about politics) and focusing on the news articles directly featuring political polarization in Hong Kong, the final number of news articles included in the present study is 838. Every instance of political conflict in each article was coded according to the coding scheme. A total of 965 instances were included.

Measurements for the content analysis. A codebook was developed according to previous studies. Two native Chinese-speaking coders performed the coding task independently. The two coders first coded a random sample of 10% together as the training process. Discrepancies were discussed and resolved until both coders reached a consensus of the coding protocol. The inter-coder reliabilities of all the constructs were acceptable, such that the Krippendorff's alpha higher than 0.8 and a percent of agreement above 95% (Krippendorf, 2004). After reaching this acceptable inter-coder reliability, the two coders split the task and each of them coded half of the rest of the data.

Table 1 reports the measurements, codebook, and inter-coder reliabilities for each variable in the content analysis.

[Table 1 is here.]

3.2. Study 2: Survey Experiment

Participants. A population-based online survey experiment was implemented in Hong Kong in October 2021. Approval was obtained from the university's human subject research committee prior to the study being conducted. Participants were local Hong Kongers, between 18 and 65 years of age. A representative sample was recruited by Dynata, an international social survey service provider, via a stratified quota sampling method where the distribution of several key demographic variables (gender, age, income, and educational level) was set to match the latest Hong Kong Census data, as closely as possible.

The project team designed the experiment stimulus and questionnaire in August 2021. A pilot test was conducted in September to October 2021. The main study was conducted in late October to early November 2021. The study recruited a total of 1,500 valid respondents. After removing those who failed to pass the manipulation checks and attention checks, and outliers of survey competition time, the final sample size was 1065. Table A1 in the Appendix reported the descriptive statistics of the major variables.

Materials and Procedure. The population-based survey experiment used a post-test only between-subject design. The study used a factorial design, containing a full cross-over of: (1) two levels of news media frames (conflict frame versus consensus frame); (2) three levels of news informant (a pro-establishment legislator versus a non-pro-establishment legislator versus a third-party independent observer); (3) three social media sources (system-recommended, versus a friend sharing, versus sponsored content); and (4) the three issue types (enduring versus emerging versus transitory). This led to 54 between-subject conditions, as reported in Table 2.

[Table 2 is here.]

In all the conditions, the procedures were the same. The participants answered a set of questions on their demographic features and news media use before they read the stimulus.

The stimulus is a vignette, which is a mock-up Facebook page but with all the brand information removed. The participants then answered the questions measuring dependent variables. After submitting their responses, participants were to be presented with a debriefing page, indicating the purpose of the study, telling them that the vignette was a mock-up page, and including a thank-you note. The participants, on average, spent 25 minutes to complete the study.

  Treatments. The present study used a vignette design. The stimulus messages were adapted from governmental websites and quality newspapers. All messages are similar in length (around 400 words in Chinese).

  To manipulate social media sources, the mock-up page indicated that this page was "recommended" (as a Facebook's algorithm recommendation) in the system recommendation condition. In the "social recommendation" condition, the page was "shared" by a pseudo-name ("'Macy Wong") and looked like an existing social connection on social media. In the "sponsored" condition, a label "Sponsored" appeared on the page. The project team used a picture editing tool to create these conditions.

  To manipulate the news source, the news story contained an interview informant, either someone who is aligned with the pro-establishment political camp or a legislator who is aligned with the other political camps or an "observer" from a third-party, professional, independent organization that monitors the social situation in Hong Kong. The quotes from the informants were the same across all conditions.

  To manipulate the news frames, the study followed Kim and Zhou (2020, p., 943), which contained two levels: the conflict frame versus the consensus frame. In the conflict frame, the news story highlighted a confrontation between two ideological groups in Hong Kong. The news featured a political debate between an informant's expression of political matters and the rebuttals of his political foes. The debate occurred as a direct quote with some

uncivil expressions. The wordings were adapted from similar experimental studies carried out in Hong Kong to test the effect of incivility discourse (Liang & Zhang, 2021). In the consensus frame, the story highlighted consensus between two ideological groups by showing discussion on various issues and that they are trying to reach a middle ground. The quotes in the political debate did not contain any uncivil content.

Appendix Figure S2 demonstrates an example stimulus.

Measurements

Perceived freedom threat. The study used four items to measure perceived freedom threats (Shen, 2015, p. 979). Each was measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The items were "The message threatened my freedom to choose," "The message tried to make a decision for me," "The message tried to manipulate me," and "The message tried to pressure me." The four items were averaged to create a new variable indicating the perceived freedom threat.

Psychological reactance. Psychological reactance was measured by items on the respondents' anger and negative cognitions (Dillard & Shen, 2005). Such measurements are believed to be reliable and valid (Quick, 2012). To measure anger, the present study adopted the scale proposed by Dillard and Shen (2005), which has been used in other reactance studies, such as Shen's (2015): "I feel angry while viewing this article," "I feel annoyed while viewing this article," "I feel irritated while viewing this article," and "I feel aggravated while viewing this article." To measure negative cognitions, the present study proposed three statements that were adapted from statements used in previous studies to measure negative cognitions, such as "The thoughts I had after reading this article were negative" (Quick et al., 2015, p. 48; Shen, 2015, p. 979). Each item presented above was measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). All items on anger and negative cognitions were averaged to create a new variable on reactance.

Perceived polarization. The measurements of perceived polarization followed Hwang, et al (2014) and Kim & Zhou (2020). The questions asked: Can you estimate the following typical political figure's attitudes related to the reclamations/to increase more rights for the immigrants/ to support the legality of same-sex marriage? (1 = not support; 5 = very support). The items included pro-establishment political figures, middle-ground political figures, the Hong Kong government, ordinary Hong Kong citizens, and commercial companies. The polarization was created by subtracting the summed score of "pro-establishment" and "government" with the summed scores of other items.

Affective polarization. The measurements of perceived polarization (Iyengar, Sood, & Lelkes, 2012) were: "what is your attitude towards the pro-establishment/other party member? (1 = not favour; 5 = very favour).

Attitude polarization. Attitude polarization is also termed as attitude extremity, which was measured by "to what extent you rate the issue" (1 = not support; 5 = very support). The project listed several items on the latest issues on government, politics, and policy in Hong Kong, including: the 2021 fiscal planning in Hong Kong, the housing system in Hong Kong, the current policy on immigrants' benefits in Hong Kong, the Hong Kong government's measures responding to the COVID-2019 pandemic, the current law and policy related to same-sex marriage in Hong Kong, and the policy address of 2021. The level of attitude extremity was the abstract value of the actual score subtracted by the mid-point (3). For example, one respondent rated "5" and the level of attitude extremity should be $| 5 - 3 | = 2$. If one respondent rated "2" then the level should be $| -2 - 3 | = 1$.

Civic and political engagement. Civic activities (Zukin et al., 2006) included donating to charity organizations and joining the civic forums to discuss community administration. Political activities (Klofstad, Sokhey & McClurg, 2013; Hong & Rojas, 2016) included publicly expressing your opinions on public and social issues, signing petitions

about a public or social issues, and distributing information or advertisements to support a public or social interest group. All the above items were measured using Yes or No. The scores were summed to indicate the levels of civic and political engagement.

4. Results

4.1. Results of the Content Analysis

To address RQ1 (how do news media in Hong Kong cover the polarization, i.e., how do those featuring the political polarization relate to the different categorizations of incivility), the study found that over one-third (31.92%) of the articles contain at least one type of political incivility as conceptualized in previous studies when featuring a political conflict.

A more detailed analysis found that over a quarter (25.60%) of the news contained negative comments when a political actor is attacking another political actor, including name-calling, pejorative speech, or aspersion. These are the most frequently occurring incivility forms appearing in the news media. In total, a few (3.94%) of the news featured profanity languages. A few (3.005%) news articles contain lying accusations. Table 3 reports the distribution and demonstrates an example for each type of uncivil discourse.

[Table 3 is here]

RQ2 asks: who are the informants expressing polarization? Who are the most frequently featured as the targets being accused of being responsible for the political polarization? The study found that among 965 instances of political conflicts, there are 371 (38.45%) identifiable actors who are explicitly featured in expressing the viewpoints that Hong Kong is polarized or accusing other political opponents. Compared with governmental officials (9.70%), non-governmental actors (73.32%) are the most frequently occur in

expressing polarization. Around 16.98% of the sources are authors of editorials. Table 4 reports the distribution of different types of sources.

[Table 4 is here]

The study documents who are under the attack of political conflicts. Table 5 shows that over half of the instances feature governmental officials or the public sectors as the target of political attack (55.53%), followed by non-governmental actors (42.32%).

[Table 5 is here.]

To address RQ3 (to what extent does the media coverage of political polarization differ across media aligned to different ideological groups), Table 6 and Table 7 report the distribution of occurrence of different types of political conflicts across different types of news media, i.e., the mass and commercial news organizations, elite news organizations, and pro-establishment news organizations (Lee, 2012). Table 6 and Table 7 found variations in the coverage of political conflicts across different media organizations.

[Table 6 and Table 7 are here.]

4.2. Results of the Survey Experiment

To examine the hypothesized relationships among variables, a series of OLS regression analysis models were estimated to examine the effects of the three source-level and message-level factors on perceived freedom threats. Then several path models were estimated to test the hypothetical relationships specified in Figure 1. The models were used to fit the pooled data first, then the sub-group of data for each of the three issue types, and three sets of models were estimated (one set for each issue).

The results with the pooled data. Table 8 reports the results from the pooled data including all three issues. Model 1 includes the main effects of the independent variables and Model 2 includes the interaction effects. Results suggest that social media posts pushed from

the "Suggested for you" function of the social media triggered a lower level of perceived freedom threat (B = -.504, SE = .163, p < .01). Messages with a consensus frame—but not a conflict frame as hypothesized—produced a higher level of perceived freedom threat (B = -.335, SE = .162, p < .05). No effect was found between the partisanship of the sourcing informants and the level of perceived freedom threat.

[Table 8 is here]

The analysis found a two-way interaction between the social media message source and news source on perceived freedom threats. Figure 2 plots this result. In the algorithm "Recommended" condition, news stories featuring a middle ground legislative council member triggered the highest level of perceived freedom threat than other sourcing informants. In the "Sponsored" condition, news stories featuring a pro-establishment legislative council member produced the highest level of perceived freedom threats.

[Figure 2 is here.]

How do the perceived threats to one's freedom trigger other psychological and political outcomes? A path analysis was conducted using the *lavaan* package in R. Table 9 reports the results from the path analysis using the pooled data containing all the three issues. The factors are dummied. Table 9 found that the conflict frames generated a lower level of perceived freedom threat (Model 1, B = -.072, SE = - .055, p <.05). The level of perceived freedom threat was positively associated with psychological reactance, such as anger and negative cognitions (Model 2, B = .666, SE = .023, p < .001). Model 3 and Model 4 found that reactance triggered perceived polarization (B = .131, SE = .035, p < .01), as well as a more extreme attitude toward the social issue (B = .085, SE = .026, p < .05); but not affective polarization. In terms of public engagement, affective polarization was positively associated with civic engagement (B = .064, SE = .046, p < .05), but not political activities. Attitude polarization was positive associated with political engagement (B = .066, SE = .04, p < .05).

[Table 9 is here]

The analysis identifies an indirect effect at a marginally significant level (indirect effect = -.001, *SE* = .000, *p* = .087), such that conflict framing may reduce freedom threats, and the reduced reactance will cause less attitude extremity; when people have a lower level of extreme attitude towards the social issues, they are less likely to join those position-taking political activities. Figure 3 reports the statistically significant coefficients.

[Figure 3 is here.]

The Housing Issue. To address RQ4 (To what extent do the relationships stipulated in H1–H9 differ across issue types), Table 10 reports the results from the housing issue. Model 1 suggests that no effect was found between most of the predictors and the level of perceived freedom threat, except message framing. In the discussion of housing issue, a conflict frame would trigger less perceived freedom threats (B = -.516, *SE* = -.253, *p* < .05).

[Table 10 is here.]

Table 11 reports the path analysis for the housing issue. It is found that the level of perceived freedom threat was positively associated with reactance (B = .682, *SE* = .004, *p* < .001). In the housing issue, reactance has no statistically significant relationships with all three indicators of polarization (perceived polarization; attitude polarization; and affective polarization); and polarization was not related to any type of public engagement.

[Table 11 is here]

The Immigrants' Issue. Table 12 reports the results for the issue of immigrants. Messages recommended by social media triggered less level of perceived freedom threat (B = -.680, *SE* = -.282, *p* < .05). News featuring a middle-ground political actor triggered less level of perceived freedom threat (B = -.606, *SE* = -.287, *p* < .05).

The analysis found a two-way interaction between the social media source and news source on the perceived freedom threats in the issue on the immigrants' rights. Figure 4 plots

this result. In the algorithm "Recommended for you" condition, news stories featuring a middle-ground legislative council member triggered the highest level of perceived freedom threat than other sourcing informants. In the "Sponsored" condition, news stories featuring a pro-establishment political actor or a third-party observer would produce a much higher level of perceived freedom threats than news featuring a middle-ground political actor.

[Figure 4 is here.]

The analysis also found a three-way interaction between the social media source, news source, and news frames on perceived freedom threats when discussing the immigrants' rights. Figure 5 plots this result. The right panel of Figure 3 (the "1 - conflict frames") suggests that when a news story is shared by a friend, featuring a non-establishment political actor clashing with other political actors, such a news story produced the least level of freedom threat. However, when the news features a situation with different political actors collaborating with each other (the left panel, "0 – consensus frames"), in the algorithm "Recommended" condition, news stories featuring a middle ground legislative council member triggered the highest level of perceived freedom threat than other sourcing informants. In the "Sponsored" condition, news stories featuring a pro-establishment legislative council member, or a third-party observer would produce a higher level of perceived freedom threats, compared with news stories featuring a middle-ground legislative council member.

[Figure 5 is here]

Table 13 reports the path analysis results on the news effects of the immigrants' rights. The level of perceived freedom threat was positively associated with reactance (B = .61, *SE* = .042, *p* < .001). In the discussion related to the immigrants' rights, reactance was positively related to perceived polarization (B = .262, *SE* = .062, *p* < .001) and attitude polarization (B = .138, *SE* = .044, *p* < .01), but not affective polarization. To predict public

engagement, only affective polarization was positively associated with civic engagement (B = .1126, *SE* = .077, *p* < .05), but not political engagement.

[Table 10 is here.]

The Same-sex Marriage Issue. Finally, Table 14 reports the results of same-sex marriage issue. None of the factors was related to freedom threat.

[Table 14 is here.]

The analysis found a two-way interaction between the social media source and news source on the perceived freedom threats in the issue on the immigrants' rights. Figure 6 plots this result. The figure shows that in the "Sponsored" condition, news stories featuring a pro-establishment legislative council member would produce the highest level of perceived freedom threats than news featuring other sourcing informants.

[Figure 6 is here.]

Table 15 reports the path analysis results. The level of perceived freedom threat was positively associated with reactance (B = .696, *SE* = .035, *p* < .001). In the discussion related to the same-sex marriage, reactance was not related to any indicator of polarization. Attitude polarization was positively associated with political engagement (B = .105, *SE* = .069, *p* < .001).

[Table 15 is here.]

In light of the above results, Table 16 reports the hypotheses testing results for an easy summary.

[Table 16 is here.]

5. Policy Implications and Recommendations

The present project explores the possibility of establishing constructive and deliberative public communication among different social groups, public sectors, and citizens from a socio-psychological and media effects research perspective. To reach this goal, the present study examines how news stories in Hong Kong cover political conflicts using quantitative content analysis. It then implements a population-based survey experiment to investigate the extent to which such media coverage—which includes a considerable amount of conflict-laden political events and radical messages—may affect ordinary readers' political attitudes and how they acquire and process political information on algorithm-driven social media, and how they react towards these messages. The results help to explore the underlying psychological mechanisms through which media messages influence people's political engagement.

As a communication-focused theory-driven project, the current project makes several implications and recommendations for the governmental institutions, the public sectors, policymakers, and public communicators to address the public concern and communicate controversial policy issues to the Hong Kong society and manage potential psychosocial discomfort or resistance.

We develop five areas of policy recommendations as illustrated in the framework in Figure S1. They include:

1. Government may offer regular updates to the public for enduring policy issues;

2. The policy-making can be envisioned to address potential future controversies related to the emerging policy issues;

3. The government can engage the civil society to develop workshops and education schemes;

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4. News media can be regarded as a forum for analytical debates and opinion sharing;

5. More content creation and curation can be made on social media.

[Figure S1-A and Figure S1-B are here.]

We detail each point in the following sections.

Policy Recommendation 01: Government may offer regular updates to the public for enduring policy issues

Our study covers three types of issues, namely, enduring issues (which have captured public attention for a long time), emerging issues (involve recent events that have begun to draw increasing attention from the media and the public), and transitory issues (political and social issues, which re-emerge when political events emerge). We contextualized the enduring issue as housing and land reclamation as the focal event. Most of the hypothesized predictors are not observed in this issue, compared with another two issues (same-sex marriage as the emerging issue, and Hong Kong's immigration policy as the transitory issue). For example, social media source was not related to reactance, and reactance was not associated with perceived polarization.

One plausible explanation is that when the housing issue has been debated for a long time in Hong Kong society, people are familiar with different sides of this issue. Our hypothesized relationship between experiment stimulus and reactance related to housing issue is not observed. It is possible that the public (dis-)satisfaction of the land issue may be narcotized (Lazarsfeld & Merton, 1948), and the treatment effects were not observable. As a result, for enduring issues that have been debated in the society for decades—due to the real difficulty in solving the housing issues in Hong Kong—it is possible that any one-off policy implementation of public communication campaign may not manage public's discomforts.

Therefore, we suggest the government and public sectors consider offering regular information sessions and updates on the government's progress in solving the housing issue. Such as a long-term public communication strategy will provide more transparency and for the public to understand the problem better. To the best of our knowledge, the latest progress on the land offering in Hong Kong related to the reclamation in Hong Kong was addressed in Oct 2021 in the Policy Address 2021 (such as items 20, 68, 89, 90, 93).

Another feasible recommendation is to set up a thematic website (like an online museum or virtual exhibition hall) to comprehensively introduce the housing and land supply issue, including the history, development, solution, and different viewpoints of different stakeholders. We noticed that the Panel on Housing in the Hong Kong Legislative Council has a documentation of related legislative papers (https://www.legco.gov.hk/yr19-20/chinese/panels/hg/papers/hg_c2.htm). When we appreciate the government and public sectors' information disclose, we suggest the thematic website can be more interactive, vivid, and having a more frequent and regular updates. This will help create an informed public, and the conflict will be moderated.

Policy Recommendation 02: The policy-making can be envisioned to address potential future controversies related to the emerging policy issues

In the current study, we focused on the legality of same-sex marriage as the emerging issue. With due respect, we found that this issue has been addressed by the Policy Address 2018 at a surface level. We echo the government's view on creating a more diverse and inclusive society in the Policy Address 2018:

"The Government, on the basis of safeguarding the current institution of heterosexual and monogamous marriage, is committed to promoting equal opportunities for people of different sexual orientation and transgender persons, with a view to fostering in the community the culture and values of inclusiveness, mutual respect and non-discrimination" (Policy Address, 2018, page 15,

https://www.policyaddress.gov.hk/2018/eng/pdf/Agenda_Ch2.pdf).

We suggest equal opportunities could be reflected in different domains in the future. The government may want to detail the rights of related social groups, not only in the taxation but also perhaps the eligibility of receiving other public resources (such as public medical service), or handling conflicts and harms. For example, the Domestic and Cohabitation Relationships Violence Ordinance (Amended 18 of 2009 s. 4) defined the cohabitation relationship as "a relationship between 2 persons (whether of the same sex or of the opposite sex) who live together as a couple in an intimate relationship." Meanwhile, the government and public sectors also should consider how to protect vulnerable social groups.

We recommend the government and public sectors to be more envisioning to consider explicating more detailed, systematic, and comprehensive guidelines and policies to address all possible domains, not only for the legality of same-sex marriage in particular, but all the controversial policies related to the under-represented social groups in general.

Policy Recommendation 03: The government can engage the civil society to develop workshops and education schemes

Our content analysis found that non-government actors were more frequently expressed polarization than governmental officials. The survey experiment found that respondents in the experiment demonstrated a lower level of reactance when non-government actors (as the third-party observer) when the messages were pushed from the system recommendation or the sponsorship (such effect was only observed in the same-sex message issue though). For emerging controversial issues, we believe non-governmental actors (civic groups and professional organizations) are influential communicators to provide more analytical insights, rather than merely presenting or lamenting the polarization situation.

Hence, we recommend that the government and public sectors work with civil society and professional groups, such as universities, academic institutes, think tanks, and NGOs, organize workshops and seminars to promote diversity, equality, and inclusion for the social good. We also recommend the government establish events, such as open challenges (say, Hackathon using data to solve the housing problems in Hong Kong). Through this type of innovative teaching-learning activity, the participants will be able to mingle with people with different political viewpoints, reducing political disparity.

We recommend more engagement with the civil society and professional groups to offer educational schemes for news media to cover the policy issues and polarizations substantively, rather than presenting the incivility or political attacks. Workshops can also help the communicator to assess the effects. The PI has already held a public workshop on experimental design. More similar events can be arranged in the future.

Policy Recommendation 04: News media can be regarded as a forum for analytical debates and opinion sharing

The content analysis found that more than half of the news content contains incivility when featuring local political conflicts. Mass and commercial media included the highest rate of incivility. This is in line with this type of media's business model to catch more public attention, and their reporting style might be inevitably sensational and conflict-laden.

News media may help to establish an informed and diversed representation of the political situation in Hong Kong. We recommend that the government and policymakers consider discussing controversial events in mass and commercial media to maximize the reach. One feasible way is to contribute commentaries or columns to the commercial media, not only restricting to elite or professional media.

We also found that the most prominent type of incivility is name-calling and negative comments targeted at political actors or other public sectors or professional organizations. Some of these contents appear in forums and columns. Name-calling refers to labelling actors, and negative comments involve belittling language. We suggest in the future public communication, all parties may try to reduce using incivility. The contributors to the news media may want to use more deliberative (presenting as diverse viewpoints as possible), analytical (avoid labelling or commenting without any substantive explanations), and thought-provoking information and arguments.

Policy Recommendation 05: More content creation and curation on social media

The current project argues that social media is an important channel and a communication intermediary. It is an under-explored communication channel to communicate public policies and manage polarization and disparity.

The present study finds that the message sources via social media are crucial in producing people's responses toward controversial public policy issues. Audiences demonstrated negative feelings about social media's "sponsored" content, especially for immigrant and same-sex marriage issues. Alternatively, they show lower perceived freedom threats when the messages are shared by their social connections or recommended by the platform's algorithm. Notably, messages shared by social media friends featuring a middle ground political actors have the lowest reactance for the immigrant issue. People may perceive social media algorithms as more "neutral" (although this may not necessarily be the case) than interference from the communicators as hard-selling messages. Interpersonal communication plays an important role. Interestingly, the present study also finds that the message features matter. Conflict frames (where conflicts between two political sides and some uncivil elements are included) may reduce—but not increase—reactance, therefore likely to reduce polarization.

Taken the above together, we recommend that the government and policymakers may consider creating and curating social media influencers, such as professional social media channels, fan pages, online forums. The governmental officials and policymakers can consider create their own social media accounts. An earlier study found that political leaders are more popular on social media than the institutions they represent (Mickoleit, 2014). The deliverables can include short videos clips introducing the scientific and historical facts of housing and land supplies, informal chat shows or talk shows (using colloquial language to

debates, even some degrees of conflicts), "vloggers," and pictures blogs. These social media influencers should also use Cantonese and local slang and buzzwords.

The advantages are three folds. First, in informal communication settings like social media, the policy communicators would be regarded as less aligned to an ideological role, especially when some policy matters (such as the rights of immigrants) have been politicized in the past two decades. Second, the multi-way interaction on social media enable deliberation and promote a more diverse and balanced view when communicating controversial policy matters (such as the chat shows programmes). When polarization refers to animosity towards those who hold a different political viewpoint, a common ground on the shared values and visions between different political camps and stakeholders is needed and achieved. To resolve polarization, reducing people's perceived freedom threats is crucial. In our analysis, across three different events, when people have negative cognitions toward a message because they believe the news tries to manipulate their behavior, they will demonstrate reactance. Consequentially, they would think that different people in the current society have divergent views on the issue (in other words, they believe the society is highly polarized). The reactance can push their attitudes around the issue to a more extreme stance. Therefore, public communicators and policymakers can consider building a communication mechanism for people to relieve their negative cognitions or articulate the messages so that people can always retain their freedom. Third, social media offer a more vivid communication modality, but the causal format and style (different from governmental sources or elite media) enable more plain, colloquial, and informal language.

Although how to manage these social media influencers and how to access their effects may be the next project, we believe this will be a viable way that the government can achieve as a short-term (1 to 3 years) action plan. Studying the public policy from social media channels is an emerging line of study research and warrants more research. The current

project wishes to pave the way for further academic investigation and evidence-based policy

research in this regard.

6. Details of the public dissemination

6.1. Two Open Seminars

The PI delivered a two-session open seminar in Hong Kong Baptist University on 29 Nov 2021.

Zhang, X. (29 Nov 2021). Hong Kong Media's Coverage of Political Polarization and its Effects on People's Political Attitudes and Behaviors. A public forum hosted by the School of Communication and Film, Hong Kong Baptist University.

The seminar shared the results and the research procedure to the public. Figure S3 in the Appendix is the poster.

6.2. One Public Workshop

The PI conducted a public workshop in Hong Kong Baptist University on 29 Nov 2021 on Experimental Design.

Zhang, X. (30 Nov 2021). Experimental Design for Computational Journalism and Digital Media. AI and Digital Media Lecture Series 2021. School of Communication and Film, Hong Kong Baptist University.

Figure S4 in the Appendix is the poster.

6.3. Two Academic Articles

Two academic articles have been submitted to the top-tier internationally peer-reviewed academic journals and conferences.

7. Conclusion

The current project explores the possibility of establishing constructive and deliberative public communication among different social groups from a socio-psychological perspective. It asks two questions: (1) how does news media in Hong Kong cover political disparity; and (2) to what extent and through what psychological mechanisms does such coverage affect civic and political outcomes?

The present study uses mixed-methods research that employs a triangulation of content analysis and an online survey experiment to serve the research objectives. Informed by the theoretical framework of news frame and political incivility, the first study is a content analysis of news articles on political conflicts published in Hong Kong local newspapers in 2010–2020 (n = 965) to examine different types of conflict frames. Informed by the theory of psychological reactance, the second study is a population-based online survey experiment using a representative sample in Hong Kong (n = 1065). It examines how news stories' source-level and message-level factors influence people's news engagement, political attitudes, and public engagement. The present study also focuses on three issues that have triggered public debates, namely, housing problems, immigrants' rights, and the legality of same-sex marriages.

The content analysis found that when covering political conflict, nearly one-third of the news stories contain at least one type of incivility. In the survey experiment, the present study found that people respond to messages differently when the message sources vary. People demonstrated a lower level of perceived freedom threats when the messages were recommended by the social media's algorithms. Sponsored messages produced the highest negative communication effects. The study found limited evidence that the partisanship of the informants sourced in the news would cast emotional responses. The study found that the consensus frame was positively associated with the perceived freedom threat. The study also

found that perceived freedom threat would trigger reactance, and reactance will further lead to a greater level of perceived polarization and attitude polarization. The effects of polarization on public engagement are limited.

Results attempt to enlighten policy makers and public communication practitioners on how Hong Kong citizens may respond to radicalized messages in the digital media when political polarization is escalated and news media's featuring of political conflicts involved a heavy dose of non-compromise and uncivil attacks among the political actors.

The project concludes with five policy recommendations on how public communicators can offer an informed, diverse, and balanced representation of the political situation in Hong Kong; and how to reduce the reactance and indicators of polarization by more sophisticated message design when explaining public policies.

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9. Tables and Figures

Table 1.

A codebook of the news

Construct	Coding Protocol and References	Inter-coder Reliability *
Basic information		
Publication date	The publication date	100%
Newspaper name	The newspaper's name	100%
Newspaper type/ideology	Based on Lee (2012), 1 = mass and commercial; 2 = elite-oriented; 3 = pro-establishment	100%
Article title	The title of the article	100%
Conflict: incivility		
Uncivil discourse	Does the article contain any uncivil discourse and expression (1 = Yes; 0 = No), Coe, Kenski, & Rains (2014)	100%
Type of incivility: Lying accusation	Lying accusation (1 = Yes; 0 = No)	100%
Type of incivility: Profanity	Profanity language (1 = Yes; 0 = No)	100%
Type of incivility: Negative comments	name-calling, pejorative for speech, aspersion (1 = Yes; 0 = No)	86.88%
Conflict: non-compromise		

Non-compromise actions	Does the article contain any actions indicating the political actors are non-compromising and disagreeing with each other (1 = Yes; 0 = No), Levendusky & Malhotra (2016)	100%
Source	The source who expressed that fact that the society is polarized, could be the author of the news (for editorials), and the informants featured in the news story	100%
The party inclination of the source	The party inclination of the source	100%
The people who are attacked by others	who is the target of a political attack?	100%

* Note: The Krippendroff's Alpha values

Table 2.

An Example of the Experimental Conditions (taking one issue as an example)

No.	Message sources: Social media (three conditions)	Message sources: news sourcing (three conditions)	Frames (two conditions)
01	System recommendation	Pro-establishment	Consensus frame
02	Peer sharing	Pro-establishment	Consensus frame
03	Sponsored	Pro-establishment	Consensus frame
04	System recommendation	Pro-democracy	Consensus frame
05	Peer sharing	Pro-democracy	Consensus frame
06	Sponsored	Pro-democracy	Consensus frame
07	System recommendation	3rd party observer	Consensus frame
08	Peer sharing	3rd party observer	Consensus frame
09	Sponsored	3rd party observer	Consensus frame
10	System recommendation	Pro-establishment	Conflict frame
11	Peer sharing	Pro-establishment	Conflict frame
12	Sponsored	Pro-establishment	Conflict frame
13	System recommendation	Pro-democracy	Conflict frame
14	Peer sharing	Pro-democracy	Conflict frame
15	Sponsored	Pro-democracy	Conflict frame
16	System recommendation	3rd party observer	Conflict frame
17	Peer sharing	3rd party observer	Conflict frame
18	Sponsored	3rd party observer	Conflict frame

19 – 54   *The same manipulation as the above; the issue is different.*

Condition 1 – 18: the housing issue

Condition 19 – 36: the immigrant issue

Condition 37 – 54: the same-sex marriage issue.

Table 3.

Distribution of different types of incivility (N = 965)

Type of incivility	Percentage	Examples (the related parts are underscored)
Type of incivility: Lying accusation	n = 29 (3.005%)	"足以證明對跨境執法的顧慮乃**誇大其辭**…" *(It shows that the worrisome from the society is over-estimated…) (Sing Tao Daily, 6 June 2019)*
Type of incivility: Profanity	n = 38 (3.94%)	"為人師表，竟以**粗口**辱罵警員" *(How can a teacher—who supposes to be a role model—used such profanity to scold the police offer…) (Ming Pao Daily, 6 Aug 2013)*
Type of incivility: Negative comments	n = 247 25.60%	"早在前年 10 月，當港大選出英籍醫學教授馬斐森為新校長，便引來許多臆測。一說力指馬斐深的醫學成就不算卓越，加上對香港、中國以至亞洲事務的認識一無所知" (Someone said Peter William Mathieson does not has an excellent achievement on medical studies; and he does not know much about the current affairs in Hong Kong, mainland China, and Asia) (Et Net Limited, 30 July 2015)
Total	n= 965 (100%)	

Table 4

Distribution of political actors who expressed disagreement or polarization (N = 371)

	Governmental officials or public sectors	Non-governmental officials, civic society	The authors of the commentary/editorials	Total
Percentage	n = 36 (9.70%)	n = 272 (73.32%)	N = 63 (16.98%)	n = 371 (100%)

Table 5

Distribution of political actors who were the targets of the political attacks during the

polarization (N = 371)

	Governmental officials or public sectors	Non-governmental officials, civic society	The authors of the commentary/editorials	Total
Percentage	n = 206 (55.53%)	n = 157 (42.32%)	n = 8 (2.16%)	n = 371 (100%)

Table 6

The cross-tabulation of incivility and media type

	Occurrence of incivility	**Type of incivility: Lying accusation**	**Type of incivility: Profanity**	**Type of incivility: Negative comments**
Mass and commercial news media	n = 196 63.84% [note]	n = 18 62.07%	n = 19 50.00%	n = 164 66.40%
Elite media	n = 52 16.94%	n = 5 17.24%	n = 6 15.79%	n = 42 17.00%
Pro-establishment media	n = 59 19.22%	n = 6 20.69%	n = 13 34.21%	n = 41 16.60%
Total	n = 307 100%	n = 29 100%	n = 38 100%	n = 247 100%

Note: the percentages means the "Occurrence" within the column (the type of incivility). For example, among all the occurrences of incivility, 63.84% (196 out of 307) were identified in mass and commercial news media.

Table 7

The cross-tabulation of non-compromise and media type (n = 371)

	The occurrence of non-compromise (%)
Mass and commercial news media	n = 249
	67.12%
Elite media	n = 65
	17.52%
Pro-establishment media	n = 57
	15.36%
Total	n = 371
	100%

Table 8

Predicting the effects of news on political polarization on perceived freedom threats (the pooled sample with all the three types of issues)

Predictors	Model 1	Model 2
Female	-.155**	-.160**
	-0.056	-0.056
Age	-0.009	-0.01
	-0.023	-0.023
Educational level	.054*	.056*
	-0.022	-0.022
Household income	-0.022	-0.021
	-0.019	-0.019
News media use	.265***	.268***
	-0.033	-0.034
Social media source: system vs sponsored	-0.127	-.504**
	-0.067	-0.163
Social media source: sharing vs sponsored	-0.045	-0.26
	-0.068	-0.166
News source: middle-ground vs pro-establishment	0.028	-0.268
	-0.068	-0.165
News source: third-party observer vs pro-establishment	0.081	-0.203
	-0.067	-0.159
Frame: conflict (vs consensus)	-.135*	-.335*
	-0.055	-0.162

Social media source (system) * News source (middle-ground)	.642**
	-0.232
Social media source (sharing) * News source (middle-ground)	0.327
	-0.233
Social media source (system) * News source (third-party observer)	.505*
	-0.231
Social media source (sharing) * News source (third-party observer)	0.293
	-0.237
Social media source (system) * frames (conflict)	0.3
	-0.229
Social media source (sharing) * frames (conflict)	0.318
	-0.233
News source (middle-ground) * frames (conflict)	0.314
	-0.235
News source (third-party observer) * frames (conflict)	
	0.283
	-0.227
Social media source (system) * News source (middle-ground) * frames (conflict)	-0.54
	-0.331

Social media source (sharing) * News source (middle-ground) * frames (conflict)		-0.572
		-0.332
Social media source (system) * News source (third-party observer) * frames (conflict)		-0.388
		-0.324
Social media source (sharing) * News source (third-party observer) * frames (conflict)		
		-0.339
		-0.33
Constant	2.012***	2.188***
	-0.202	-0.22
N	1065	1065
R-squared	0.088	0.098
Adj. R-squared	0.079	0.079
Residual Std. Error	.896 (df = 1054)	.896 (df = 1042)
F Statistic	10.175*** (df = 10; 1054)	5.159*** (df = 22; 1042)

***$p < .001$; **$p < .01$; *$p < .05$

Table 9

Path models predicting the psychological and political outcomes (the pooled sample with all the three types of issues)

	Standardized coefficients	Standard errors	z-value	*p* value
Model 1: Predicting perceived freedom threats				
Female	-0.082	0.055	-2.798	0.005
Age	-0.013	0.023	-0.411	0.681
Educational level	0.079	0.022	2.441	0.015
Household income	-0.036	0.019	-1.177	0.239
News media use	0.242	0.033	7.973	0
Social media source: system vs sponsored	-0.064	0.067	-1.903	0.057
Social media source: sharing vs sponsored	-0.022	0.067	-0.66	0.509
Frame: conflict (vs consensus)	-0.072	0.055	-2.463	0.014
News source: pro-establishment vs third-party	-0.041	0.067	-1.217	0.224
News source: middle-ground vs third-party	-0.027	0.067	-0.786	0.432
Model 2: Predicting psychological reactance				
Threats	0.666	0.023	28.529	0
Female	0.02	0.041	0.866	0.387

Age	0.007	0.017	0.287	0.774
Educational level	0.019	0.016	0.764	0.445
Household income	-0.031	0.014	-1.324	0.185
News media use	0.05	0.025	2.116	0.034
Social media source: system vs sponsored	-0.015	0.049	-0.589	0.556
Social media source: sharing vs sponsored	0.004	0.05	0.154	0.878
Frame: conflict (vs consensus)	0.121	0.04	5.364	0
News source: pro-establishment vs third-party	0.03	0.049	1.18	0.238
News source: middle-ground vs third-party	0.016	0.05	0.622	0.534
Model 3: Predicting perceived polarization ~				
Reactance	0.131	0.035	3.152	0.002
Threats	-0.077	0.034	-1.836	0.066
Female	-0.045	0.047	-1.474	0.14
Age	-0.044	0.019	-1.349	0.177
Educational level	0.03	0.019	0.892	0.372
Household income	0.031	0.016	0.952	0.341
News media use	-0.031	0.029	-0.969	0.333
Social media source: system vs sponsored	0.032	0.056	0.906	0.365

Social media source: sharing vs sponsored	0.013	0.057	0.383	0.702
Frame: conflict (vs consensus)	-0.054	0.047	-1.748	0.08
News source: pro-establishment vs third-party	0.013	0.056	0.376	0.707
News source: middle-ground vs third-party	-0.029	0.057	-0.82	0.412
Model 4: Predicting attitude polarization ~				
Reactance	0.085	0.026	2.081	0.037
Threats	0.049	0.025	1.175	0.24
Female	-0.02	0.034	-0.651	0.515
Age	-0.101	0.014	-3.193	0.001
Educational level	0.01	0.014	0.289	0.773
Household income	0.052	0.011	1.631	0.103
News media use	0.037	0.021	1.16	0.246
Social media source: system vs sponsored	-0.057	0.041	-1.662	0.097
Social media source: sharing vs sponsored	-0.021	0.041	-0.603	0.547
Frame: conflict (vs consensus)	-0.029	0.034	-0.951	0.342
News source: pro-establishment vs third-party	0.084	0.041	2.431	0.015
News source: middle-ground vs third-party	-0.035	0.041	-1.018	0.309

Model 5: Predicting affective polarization				
Reactance	0.042	0.029	1.012	0.312
Threats	-0.059	0.029	-1.415	0.157
Female	-0.041	0.039	-1.347	0.178
Age	-0.105	0.016	-3.28	0.001
Educational level	0.057	0.016	1.707	0.088
Household income	0.015	0.013	0.454	0.65
News media use	0.014	0.024	0.422	0.673
Social media source: system vs sponsored	-0.028	0.047	-0.802	0.423
Social media source: sharing vs sponsored	-0.036	0.048	-1.021	0.307
Frame: conflict (vs consensus)	-0.024	0.039	-0.779	0.436
News source: pro-establishment vs third-party	0.047	0.047	1.335	0.182
News source: middle-ground vs third-party	-0.033	0.048	-0.948	0.343
Model 6: Predicting civic engagement ~				
Perceived polarization	-0.02	0.038	-0.73	0.465
Attitude polarization	0.013	0.052	0.466	0.641
Affective polarization	0.064	0.046	2.283	0.022
Reactance	0.052	0.042	1.44	0.15
Threats	0.198	0.041	5.413	0

Female	-0.062	0.056	-2.348	0.019
Age	-0.114	0.023	-4.034	0
Educational level	0.029	0.022	1.009	0.313
Household income	-0.019	0.019	-0.676	0.499
News media use	0.341	0.035	12.131	0
Social media source: system vs sponsored	0.026	0.068	0.853	0.394
Social media source: sharing vs sponsored	0.015	0.068	0.481	0.63
Frame: conflict (vs consensus)	-0.029	0.056	-1.091	0.275
News source: pro-establishment vs third-party	0.031	0.068	1.012	0.312
News source: middle-ground vs third-party	0.068	0.068	2.241	0.025
Model 7: Predicting political engagement				
Perceived polarization	0.028	0.03	0.972	0.331
Attitude polarization	0.066	0.04	2.262	0.024
Affective polarization	0.053	0.035	1.818	0.069
Reactance	-0.01	0.033	-0.257	0.797
Threats	0.171	0.032	4.492	0
Female	-0.076	0.043	-2.767	0.006
Age	-0.097	0.018	-3.323	0.001
Educational level	0.008	0.017	0.27	0.787
Household income	0.009	0.015	0.307	0.759

News media use	0.314	0.027	10.76	0
Social media source: system vs sponsored	0.024	0.052	0.773	0.44
Social media source: sharing vs sponsored	0.007	0.052	0.221	0.825
Frame: conflict (vs consensus)	-0.004	0.043	-0.149	0.882
News source: pro-establishment vs third-party	0.015	0.052	0.484	0.629
News source: middle-ground vs third-party	0.061	0.052	1.917	0.055

R-squared

Model 1	0.088
Model 2	0.47
Model 3	0.02
Model 4	0.053
Model 5	0.028
Model 6	0.267
Model 7	0.207

Table 10

Predicting the effects of news on political polarization on perceived freedom threats (the housing issue)

Predictors	Model 1	Model 2
Female	-0.167	-0.172
	-0.093	-0.095
Age	-0.045	-0.047
	-0.037	-0.038
Educational level	0.063	0.068
	-0.037	-0.038
Household income	0.002	-0.002
	-0.031	-0.032
News media use	.273***	.271***
	-0.057	-0.059
Social media source: system vs sponsored	-0.001	-0.349
	-0.113	-0.27
Social media source: sharing vs sponsored	-0.031	-0.323
	-0.114	-0.269
News source: middle-ground vs pro-establishment	-0.027	-0.037
	-0.112	-0.284
News source: third-party observer vs pro-establishment	0.11	-0.333
	-0.113	-0.262
Frame: conflict (vs consensus)	-0.13	-.516*
	-0.093	-0.253

Social media source (system) * News source (middle-ground)	0.153
	-0.398
Social media source (sharing) * News source (middle-ground)	0.038
	-0.385
Social media source (system) * News source (third-party observer)	0.661
	-0.393
Social media source (sharing) * News source (third-party observer)	0.427
	-0.391
Social media source (system) * frames (conflict)	0.563
	-0.365
Social media source (sharing) * frames (conflict)	0.563
	-0.389
News source (middle-ground) * frames (conflict)	0.046
	-0.406
News source (third-party observer) * frames (conflict)	
	0.739
	-0.378
Social media source (system) * News source (middle-ground) * frames (conflict)	-0.278
	-0.56

Social media source (sharing) * News source (middle-ground) * frames (conflict)		-0.248
		-0.566
Social media source (system) * News source (third-party observer) * frames (conflict)		-1.034
		-0.544
Social media source (sharing) * News source (third-party observer) * frames (conflict)		
		-0.693
		-0.565
Constant	1.931***	2.191***
	-0.334	-0.369
N	354	354
R-squared	0.108	0.127
Adj. R-squared	0.082	0.069
Residual Std. Error	.860 (df = 343)	.866 (df = 331)
F Statistic	4.140*** (df = 10; 343)	2.196** (df = 22; 331)

***$p < .001$; **$p < .01$; *$p < .05$

Table 11

Path models predicting the psychological and political outcomes (the housing issue)

	Standardized coefficients	Standard errors	z-value	p value
Model 1: Predicting perceived freedom threats				
Female	-0.092	0.092	-1.828	0.068
Age	-0.065	0.036	-1.228	0.219
Educational level	0.094	0.036	1.728	0.084
Household income	0.004	0.03	0.069	0.945
News media use	0.255	0.056	4.826	0
Social media source: system vs sponsored	0	0.111	-0.008	0.993
Social media source: sharing vs sponsored	-0.016	0.112	-0.279	0.781
Frame: conflict (vs consensus)	-0.073	0.091	-1.427	0.154
News source: pro-establishment vs third-party	-0.059	0.111	-0.989	0.323
News source: middle-ground vs third-party	-0.071	0.114	-1.192	0.233
Model 2: Predicting psychological reactance				
Threats	0.682	0.04	17.371	0
Female	-0.015	0.069	-0.397	0.691
Age	0.025	0.027	0.644	0.52

Educational level	0.069	0.027	1.719	0.086
Household income	-0.041	0.023	-1.068	0.286
News media use	0.059	0.044	1.463	0.143
Social media source: system vs sponsored	-0.024	0.084	-0.561	0.575
Social media source: sharing vs sponsored	0.002	0.084	0.053	0.958
Frame: conflict (vs consensus)	0.115	0.069	3.06	0.002
News source: pro-establishment vs third-party	0.041	0.083	0.941	0.347
News source: middle-ground vs third-party	0.026	0.086	0.582	0.561
Model 3: Predicting perceived polarization ~				
Reactance	0.015	0.066	0.202	0.84
Threats	-0.064	0.067	-0.86	0.39
Female	-0.034	0.085	-0.652	0.515
Age	0.099	0.034	1.803	0.071
Educational level	0.134	0.034	2.384	0.017
Household income	-0.025	0.028	-0.468	0.64
News media use	-0.133	0.054	-2.365	0.018
Social media source: system vs sponsored	0.029	0.103	0.476	0.634
Social media source: sharing vs sponsored	0.078	0.104	1.29	0.197

Frame: conflict (vs consensus)	-0.036	0.086	-0.685	0.493
News source: pro-establishment vs third-party	0.073	0.103	1.19	0.234
News source: middle-ground vs third-party	-0.02	0.106	-0.329	0.742
Model 4: Predicting attitude polarization ~				
Reactance	0.077	0.043	1.067	0.286
Threats	0.162	0.044	2.227	0.026
Female	-0.049	0.056	-0.966	0.334
Age	-0.126	0.022	-2.348	0.019
Educational level	-0.052	0.022	-0.949	0.343
Household income	0.04	0.019	0.762	0.446
News media use	-0.041	0.036	-0.737	0.461
Social media source: system vs sponsored	-0.071	0.068	-1.196	0.232
Social media source: sharing vs sponsored	-0.081	0.068	-1.372	0.17
Frame: conflict (vs consensus)	-0.01	0.056	-0.198	0.843
News source: pro-establishment vs third-party	0.126	0.067	2.099	0.036
News source: middle-ground vs third-party	-0.024	0.07	-0.404	0.686
Model 5: Predicting affective polarization				

Reactance	-0.066	0.051	-0.884	0.377
Threats	0.069	0.052	0.912	0.362
Female	0.008	0.066	0.152	0.879
Age	0.053	0.026	0.961	0.337
Educational level	0.136	0.026	2.391	0.017
Household income	0.025	0.022	0.451	0.652
News media use	-0.04	0.042	-0.696	0.486
Social media source: system vs sponsored	-0.041	0.08	-0.674	0.5
Social media source: sharing vs sponsored	-0.005	0.08	-0.081	0.936
Frame: conflict (vs consensus)	0.081	0.067	1.513	0.13
News source: pro-establishment vs third-party	0.055	0.08	0.882	0.378
News source: middle-ground vs third-party	-0.026	0.082	-0.426	0.67
Model 6: Predicting civic engagement ~				
Perceived polarization	-0.033	0.062	-0.698	0.485
Attitude polarization	-0.035	0.095	-0.725	0.469
Affective polarization	0.041	0.08	0.875	0.381
Reactance	0.05	0.074	0.779	0.436
Threats	0.144	0.076	2.208	0.027
Female	-0.138	0.096	-3.047	0.002
Age	-0.132	0.039	-2.72	0.007

Educational level	0.028	0.039	0.558	0.577
Household income	0.015	0.032	0.323	0.746
News media use	0.385	0.062	7.821	0
Social media source: system vs sponsored	-0.009	0.117	-0.18	0.857
Social media source: sharing vs sponsored	-0.009	0.118	-0.178	0.859
Frame: conflict (vs consensus)	-0.03	0.097	-0.638	0.524
News source: pro-establishment vs third-party	-0.005	0.117	-0.103	0.918
News source: middle-ground vs third-party	0.043	0.12	0.802	0.423
Model 7: Predicting political engagement				
Perceived polarization	0.024	0.049	0.484	0.629
Attitude polarization	0.018	0.075	0.361	0.718
Affective polarization	0.095	0.063	1.932	0.053
Reactance	-0.014	0.059	-0.21	0.833
Threats	0.116	0.06	1.712	0.087
Female	-0.134	0.076	-2.83	0.005
Age	-0.158	0.031	-3.139	0.002
Educational level	-0.028	0.031	-0.535	0.593
Household income	0.041	0.025	0.854	0.393
News media use	0.369	0.049	7.201	0

Social media source: system vs sponsored	-0.039	0.092	-0.708	0.479
Social media source: sharing vs sponsored	0.008	0.093	0.15	0.881
Frame: conflict (vs consensus)	0.009	0.077	0.19	0.85
News source: pro-establishment vs third-party	-0.041	0.092	-0.732	0.464
News source: middle-ground vs third-party	0.005	0.094	0.098	0.922
R-squared				
Model 1	0.108			
Model 2	0.513			
Model 3	0.052			
Model 4	0.097			
Model 5	0.03			
Model 6	0.291			
Model 7	0.23			

Table 12

Predicting the effects of news on political polarization on perceived freedom threats (the immigrants' rights issue)

Predictors	Model 1	Model 2
Female	-.294**	-.320**
	-0.099	-0.1
Age	0.02	0.025
	-0.043	-0.043
Educational level	0.043	0.05
	-0.04	-0.04
Household income	-0.049	-0.051
	-0.035	-0.035
News media use	.267***	.281***
	-0.058	-0.059
Social media source: system vs sponsored	-.250*	-.680*
	-0.118	-0.282
Social media source: sharing vs sponsored	-0.085	-0.569
	-0.118	-0.317
News source: middle-ground vs pro-establishment	0.023	-.606*
	-0.121	-0.287
News source: third-party observer vs pro-establishment	0.083	0.046
	-0.117	-0.278
Frame: conflict (vs consensus)	-0.18	-0.515
	-0.097	-0.295

Social media source (system) * News source (middle-ground)	1.166**
	-0.409
Social media source (sharing) * News source (middle-ground)	.865*
	-0.425
Social media source (system) * News source (third-party observer)	0.064
	-0.395
Social media source (sharing) * News source (third-party observer)	0.271
	-0.43
Social media source (system) * frames (conflict)	0.384
	-0.41
Social media source (sharing) * frames (conflict)	0.79
	-0.429
News source (middle-ground) * frames (conflict)	0.78
	-0.41
News source (third-party observer) * frames (conflict)	
	-0.016
	-0.403
Social media source (system) * News source (middle-ground) * frames (conflict)	-1.049
	-0.599

Social media source (sharing) * News source (middle-ground) * frames (conflict)		-1.451*
		-0.595
Social media source (system) * News source (third-party observer) * frames (conflict)		0.136
		-0.567
Social media source (sharing) * News source (third-party observer) * frames (conflict)		
		-0.406
		-0.582
Constant	2.332***	2.522***
	-0.385	-0.411
N	345	345
R-squared	0.112	0.152
Adj. R-squared	0.086	0.094
Residual Std. Error	.894 (df = 334)	.890 (df = 322)
F Statistic	4.227*** (df = 10; 334)	2.629*** (df = 22; 322)

***$p < .001$; **$p < .01$; *$p < .05$

Table 13

Path models predicting the psychological and political outcomes (the immigrants' rights issue)

	Standardized coefficients	Standard errors	z-value	p value
Model 1: Predicting perceived freedom threats				
Female	-0.157	0.097	-3.023	0.003
Age	0.026	0.042	0.472	0.637
Educational level	0.063	0.039	1.099	0.272
Household income	-0.079	0.034	-1.446	0.148
News media use	0.245	0.057	4.648	0
Social media source: system vs sponsored	-0.125	0.116	-2.151	0.031
Social media source: sharing vs sponsored	-0.043	0.116	-0.731	0.465
Frame: conflict (vs consensus)	-0.096	0.096	-1.882	0.06
News source: pro-establishment vs third-party	-0.042	0.115	-0.722	0.471
News source: middle-ground vs third-party	-0.03	0.116	-0.515	0.607
Model 2: Predicting psychological reactance				
Threats	0.61	0.042	13.783	0
Female	0.014	0.077	0.325	0.745

Age	-0.035	0.032	-0.789	0.43
Educational level	0.053	0.03	1.132	0.258
Household income	-0.051	0.027	-1.138	0.255
News media use	0.055	0.046	1.222	0.222
Social media source: system vs sponsored	0.001	0.091	0.021	0.983
Social media source: sharing vs sponsored	0.005	0.09	0.101	0.92
Frame: conflict (vs consensus)	0.07	0.075	1.664	0.096
News source: pro-establishment vs third-party	0.018	0.09	0.372	0.71
News source: middle-ground vs third-party	0.022	0.09	0.461	0.645
Model 3: Predicting perceived polarization ~				
Reactance	0.262	0.059	3.944	0
Threats	-0.061	0.057	-0.899	0.369
Female	0.002	0.084	0.037	0.971
Age	-0.074	0.036	-1.34	0.18
Educational level	-0.076	0.033	-1.293	0.196
Household income	0.166	0.029	2.987	0.003
News media use	0.04	0.051	0.715	0.474
Social media source: system vs sponsored	-0.016	0.1	-0.262	0.793

Social media source: sharing vs sponsored	-0.035	0.099	-0.583	0.56
Frame: conflict (vs consensus)	-0.014	0.082	-0.275	0.783
News source: pro-establishment vs third-party	0.021	0.098	0.357	0.721
News source: middle-ground vs third-party	-0.041	0.099	-0.697	0.486
Model 4: Predicting attitude polarization ~				
Reactance	0.138	0.044	2.069	0.039
Threats	0.064	0.042	0.932	0.351
Female	0.083	0.062	1.541	0.123
Age	-0.102	0.026	-1.836	0.066
Educational level	0.038	0.025	0.649	0.517
Household income	0.051	0.022	0.902	0.367
News media use	0.018	0.037	0.318	0.75
Social media source: system vs sponsored	-0.002	0.074	-0.039	0.969
Social media source: sharing vs sponsored	0.059	0.073	0.981	0.327
Frame: conflict (vs consensus)	0.003	0.061	0.049	0.961
News source: pro-establishment vs third-party	0.055	0.072	0.938	0.348
News source: middle-ground vs third-party	-0.08	0.073	-1.362	0.173

Model 5: Predicting affective polarization				
Reactance	0.116	0.049	1.696	0.09
Threats	-0.089	0.047	-1.267	0.205
Female	-0.08	0.069	-1.467	0.142
Age	-0.092	0.029	-1.631	0.103
Educational level	0.01	0.027	0.171	0.864
Household income	0.015	0.024	0.268	0.789
News media use	0.032	0.042	0.563	0.574
Social media source: system vs sponsored	-0.028	0.082	-0.463	0.643
Social media source: sharing vs sponsored	-0.056	0.081	-0.918	0.358
Frame: conflict (vs consensus)	-0.081	0.068	-1.513	0.13
News source: pro-establishment vs third-party	-0.015	0.081	-0.249	0.804
News source: middle-ground vs third-party	-0.007	0.081	-0.11	0.912
Model 6: Predicting civic engagement ~				
Perceived polarization	-0.008	0.064	-0.151	0.88
Attitude polarization	0.016	0.086	0.318	0.751
Affective polarization	0.126	0.077	2.584	0.01
Reactance	0.076	0.069	1.245	0.213
Threats	0.163	0.065	2.653	0.008

Female	-0.063	0.096	-1.297	0.194
Age	-0.176	0.041	-3.531	0
Educational level	-0.056	0.038	-1.06	0.289
Household income	-0.043	0.034	-0.849	0.396
News media use	0.298	0.057	5.981	0
Social media source: system vs sponsored	0.052	0.113	0.973	0.331
Social media source: sharing vs sponsored	0.066	0.113	1.234	0.217
Frame: conflict (vs consensus)	-0.054	0.093	-1.138	0.255
News source: pro-establishment vs third-party	0.011	0.111	0.208	0.835
News source: middle-ground vs third-party	0.103	0.112	1.941	0.052
Model 7: Predicting political engagement				
Perceived polarization	0.027	0.048	0.514	0.607
Attitude polarization	0.063	0.065	1.203	0.229
Affective polarization	0.037	0.058	0.722	0.47
Reactance	0.032	0.052	0.494	0.621
Threats	0.141	0.049	2.204	0.028
Female	-0.1	0.072	-1.981	0.048
Age	-0.122	0.031	-2.348	0.019
Educational level	-0.061	0.029	-1.115	0.265
Household income	-0.009	0.025	-0.167	0.867

News media use	0.283	0.043	5.454	0
Social media source: system vs sponsored	0.094	0.085	1.69	0.091
Social media source: sharing vs sponsored	0.069	0.085	1.237	0.216
Frame: conflict (vs consensus)	-0.058	0.07	-1.172	0.241
News source: pro-establishment vs third-party	0.041	0.084	0.746	0.456
News source: middle-ground vs third-party	0.119	0.085	2.156	0.031

R-squared

Model 1	0.112
Model 2	0.4
Model 3	0.086
Model 4	0.075
Model 5	0.035
Model 6	0.259
Model 7	0.197

Table 14

Predicting the effects of news on political polarization on perceived freedom threats (the same-sex marriage issue)

Predictors	Model 1	Model 2
Female	-0.024	-0.027
	-0.099	-0.102
Age	-0.017	-0.022
	-0.041	-0.042
Educational level	0.056	0.06
	-0.04	-0.041
Household income	-0.031	-0.028
	-0.033	-0.034
News media use	.264***	.281***
	-0.061	-0.062
Social media source: system vs sponsored	-0.117	-0.527
	-0.122	-0.298
Social media source: sharing vs sponsored	-0.003	0.05
	-0.122	-0.29
News source: middle-ground vs pro-establishment	0.084	-0.201
	-0.12	-0.29
News source: third-party observer vs pro-establishment	0.053	-0.365
	-0.121	-0.294
Frame: conflict (vs consensus)	-0.111	0.1
	-0.099	-0.307

Social media source (system) * News source (middle-ground)	0.731
	-0.407
Social media source (sharing) * News source (middle-ground)	0.14
	-0.418
Social media source (system) * News source (third-party observer)	.970[*]
	-0.428
Social media source (sharing) * News source (third-party observer)	0.302
	-0.425
Social media source (system) * frames (conflict)	-0.178
	-0.43
Social media source (sharing) * frames (conflict)	-0.4
	-0.417
News source (middle-ground) * frames (conflict)	0.012
	-0.427
News source (third-party observer) * frames (conflict)	
	0.113
	-0.419
Social media source (system) * News source (middle-ground) * frames (conflict)	-0.16
	-0.595

Social media source (sharing) * News source (middle-ground) * frames (conflict)		0.053
		-0.594
Social media source (system) * News source (third-party observer) * frames (conflict)		-0.308
		-0.592
Social media source (sharing) * News source (third-party observer) * frames (conflict)		
		-0.109
		-0.6
Constant	1.902***	1.950***
	-0.349	-0.389
N	366	366
R-squared	0.079	0.11
Adj. R-squared	0.053	0.053
Residual Std. Error	.936 (df = 355)	.936 (df = 343)
F Statistic	3.037** (df = 10; 355)	1.931** (df = 22; 343)

***$p < .001$; **$p < .01$; *$p < .05$

Table 15

Path models predicting the psychological and political outcomes (the same-sex marriage issue)

	Standardized coefficients	Standard errors	z-value	*p* value
Model 1: Predicting perceived freedom threats				
Female	-0.013	0.098	-0.248	0.804
Age	-0.022	0.041	-0.414	0.679
Educational level	0.08	0.04	1.4	0.162
Household income	-0.052	0.033	-0.946	0.344
News media use	0.236	0.06	4.39	0
Social media source: system vs sponsored	-0.058	0.12	-0.978	0.328
Social media source: sharing vs sponsored	-0.002	0.12	-0.028	0.978
Frame: conflict (vs consensus)	-0.058	0.097	-1.143	0.253
News source: pro-establishment vs third-party	-0.026	0.12	-0.443	0.658
News source: middle-ground vs third-party	0.015	0.118	0.259	0.795
Model 2: Predicting psychological reactance				
Threats	0.696	0.035	18.352	0
Female	0.044	0.066	1.184	0.237

Age	0.019	0.027	0.481	0.63
Educational level	-0.055	0.027	-1.302	0.193
Household income	-0.007	0.022	-0.173	0.862
News media use	0.019	0.042	0.464	0.643
Social media source: system vs sponsored	-0.039	0.081	-0.893	0.372
Social media source: sharing vs sponsored	0.003	0.081	0.082	0.935
Frame: conflict (vs consensus)	0.177	0.066	4.795	0
News source: pro-establishment vs third-party	0.032	0.081	0.749	0.454
News source: middle-ground vs third-party	0.002	0.08	0.055	0.956
Model 3: Predicting perceived polarization ~				
Reactance	0.104	0.054	1.443	0.149
Threats	-0.09	0.051	-1.234	0.217
Female	-0.135	0.069	-2.634	0.008
Age	-0.186	0.029	-3.407	0.001
Educational level	0.019	0.028	0.324	0.746
Household income	-0.047	0.023	-0.856	0.392
News media use	-0.004	0.043	-0.075	0.94
Social media source: system vs sponsored	0.109	0.085	1.824	0.068

Social media source: sharing vs sponsored	0.002	0.085	0.031	0.976
Frame: conflict (vs consensus)	-0.07	0.071	-1.338	0.181
News source: pro-establishment vs third-party	-0.021	0.084	-0.364	0.716
News source: middle-ground vs third-party	0	0.083	-0.005	0.996
Model 4: Predicting attitude polarization ~				
Reactance	0.056	0.046	0.763	0.445
Threats	-0.04	0.043	-0.552	0.581
Female	-0.067	0.058	-1.311	0.19
Age	-0.053	0.024	-0.963	0.335
Educational level	0.05	0.024	0.852	0.394
Household income	0.064	0.019	1.147	0.251
News media use	0.103	0.037	1.845	0.065
Social media source: system vs sponsored	-0.1	0.071	-1.66	0.097
Social media source: sharing vs sponsored	-0.041	0.072	-0.696	0.486
Frame: conflict (vs consensus)	-0.073	0.06	-1.38	0.168
News source: pro-establishment vs third-party	0.081	0.071	1.362	0.173
News source: middle-ground vs third-party	0.02	0.07	0.331	0.741

Model 5: Predicting affective polarization				
Reactance	0.065	0.053	0.921	0.357
Threats	-0.13	0.05	-1.814	0.07
Female	-0.06	0.067	-1.197	0.231
Age	-0.259	0.028	-4.831	0
Educational level	0.026	0.028	0.46	0.646
Household income	-0.002	0.023	-0.041	0.967
News media use	0.031	0.042	0.576	0.565
Social media source: system vs sponsored	-0.023	0.083	-0.384	0.701
Social media source: sharing vs sponsored	-0.047	0.083	-0.814	0.416
Frame: conflict (vs consensus)	-0.054	0.069	-1.038	0.299
News source: pro-establishment vs third-party	0.113	0.082	1.953	0.051
News source: middle-ground vs third-party	-0.043	0.081	-0.746	0.456
Model 6: Predicting civic engagement ~				
Perceived polarization	0.04	0.078	0.833	0.405
Attitude polarization	0.047	0.091	1.004	0.315
Affective polarization	0.02	0.081	0.397	0.691
Reactance	0.026	0.077	0.417	0.677
Threats	0.294	0.072	4.691	0

Female	0.006	0.098	0.129	0.898
Age	-0.033	0.042	-0.691	0.49
Educational level	0.105	0.04	2.108	0.035
Household income	-0.023	0.032	-0.492	0.623
News media use	0.338	0.061	7.095	0
Social media source: system vs sponsored	0.014	0.12	0.279	0.78
Social media source: sharing vs sponsored	-0.013	0.119	-0.253	0.801
Frame: conflict (vs consensus)	-0.004	0.1	-0.099	0.921
News source: pro-establishment vs third-party	0.088	0.119	1.739	0.082
News source: middle-ground vs third-party	0.05	0.117	0.998	0.318
Model 7: Predicting political engagement				
Perceived polarization	0.091	0.06	1.821	0.069
Attitude polarization	0.105	0.069	2.153	0.031
Affective polarization	0.016	0.062	0.311	0.756
Reactance	-0.029	0.058	-0.451	0.652
Threats	0.258	0.055	3.947	0
Female	-0.009	0.074	-0.198	0.843
Age	-0.012	0.032	-0.242	0.809
Educational level	0.093	0.03	1.791	0.073
Household income	0.004	0.025	0.079	0.937

News media use	0.306	0.047	6.166	0
Social media source: system vs sponsored	0.008	0.091	0.154	0.877
Social media source: sharing vs sponsored	-0.049	0.091	-0.935	0.35
Frame: conflict (vs consensus)	0.026	0.076	0.553	0.58
News source: pro-establishment vs third-party	0.037	0.091	0.707	0.48
News source: middle-ground vs third-party	0.043	0.089	0.821	0.412

R-squared

Model 1	0.079
Model 2	0.514
Model 3	0.069
Model 4	0.056
Model 5	0.105
Model 6	0.319
Model 7	0.26

Table 16

Results of Hypotheses Testing

Research Hypotheses	Pooled sample	Housing	Immigrants	Same-sex marriage
H1: News stories featuring a higher level of political polarization will generate higher levels of perceived freedom threat than news stories featuring a lower level of polarization.	No (the consensus frame will)	No	No	No
H2: News stories with different message sources will generate different levels of perceived freedom threat.	Yes	No	Yes	Yes
H3: A perceived freedom threat is positively related to psychological reactance.	Yes	Yes	Yes	Yes
H4: Psychological reactance is positively associated with a greater level of perceived polarization.	Yes	No	Yes	No

H5: Psychological reactance is positively associated with a higher level of attitude polarization.	Yes	No	Yes	No
H6: Psychological reactance is positively associated with a greater level of affective polarization.	No	No	No	No
H7: Perceived polarization is (a) positively associated with political participation and (b) negatively associated with civic participation.	No	No	No	No
H8: Attitude polarization is (a) positively associated with political participation and (b) negatively associated with civic participation.	Yes (for political engagement)	No	No	Yes (for political engageme nt)
H9: Affective polarization is (a) positively associated with political participation and (b)	Yes	No	Yes	No

negatively associated with civic	(for civic	(for civic
participation.	engagement	engagement
	only)	only)
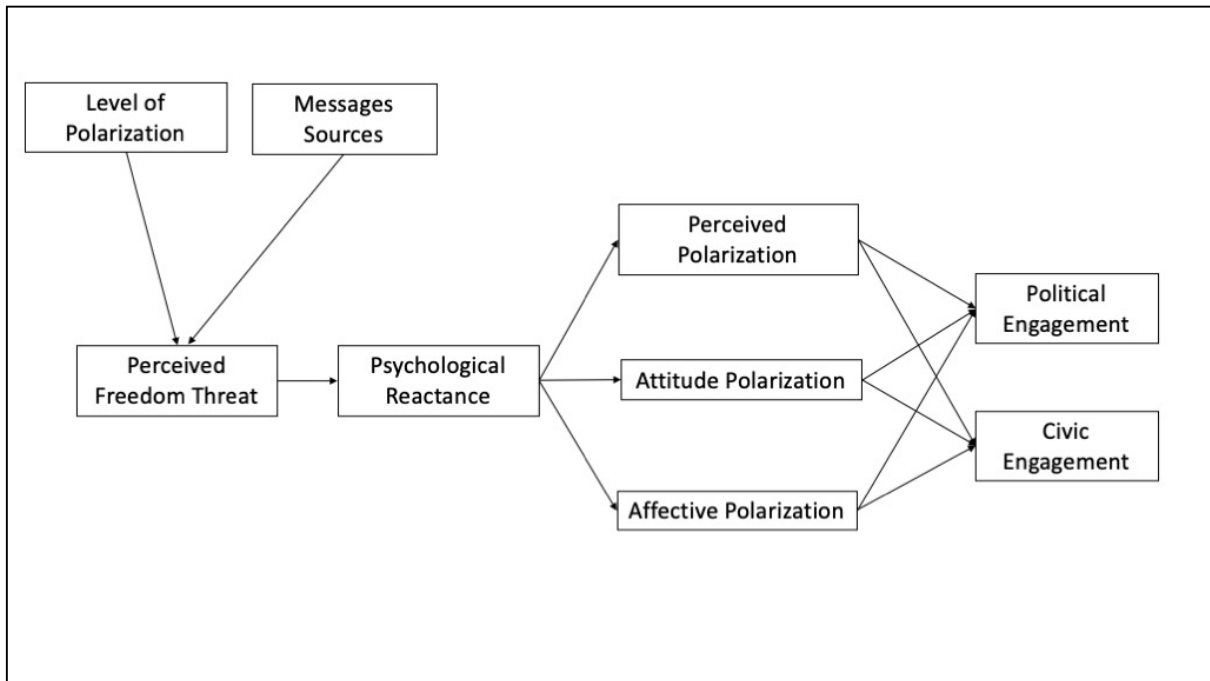
Figure 1. The Theoretical Framework Stipulating the Relationship of the Constructs
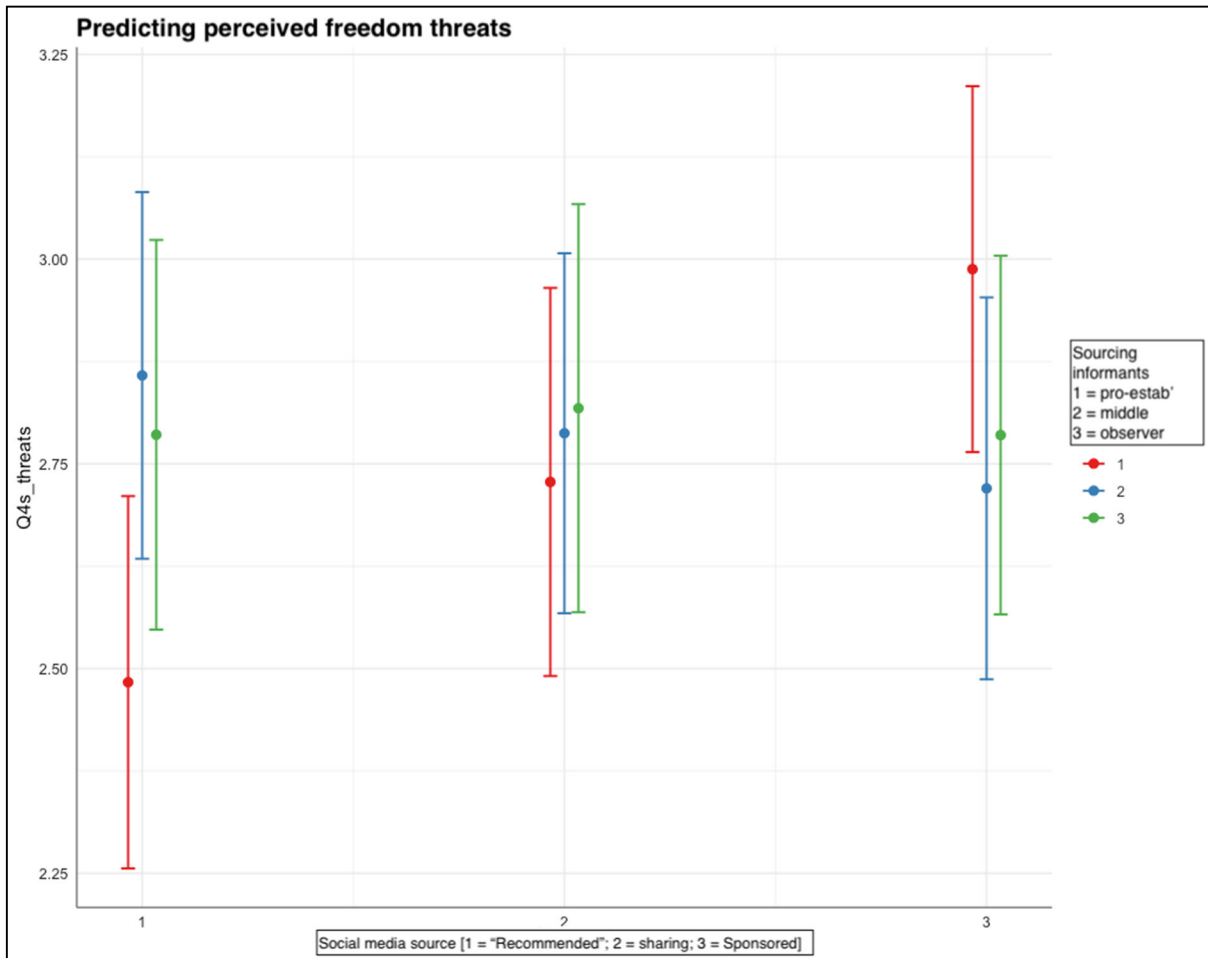
Figure 2. Plotting the Two-way Interaction Effect of Social Media Message Source and News Source on Perceive Freedom Threats (for Pooled Data). The substantive content of the chart is plotted using the "sjPlot," "sjmisc," and "ggplot2" packages in R. Only the legend texts are added by the PI using the "Preview" application.
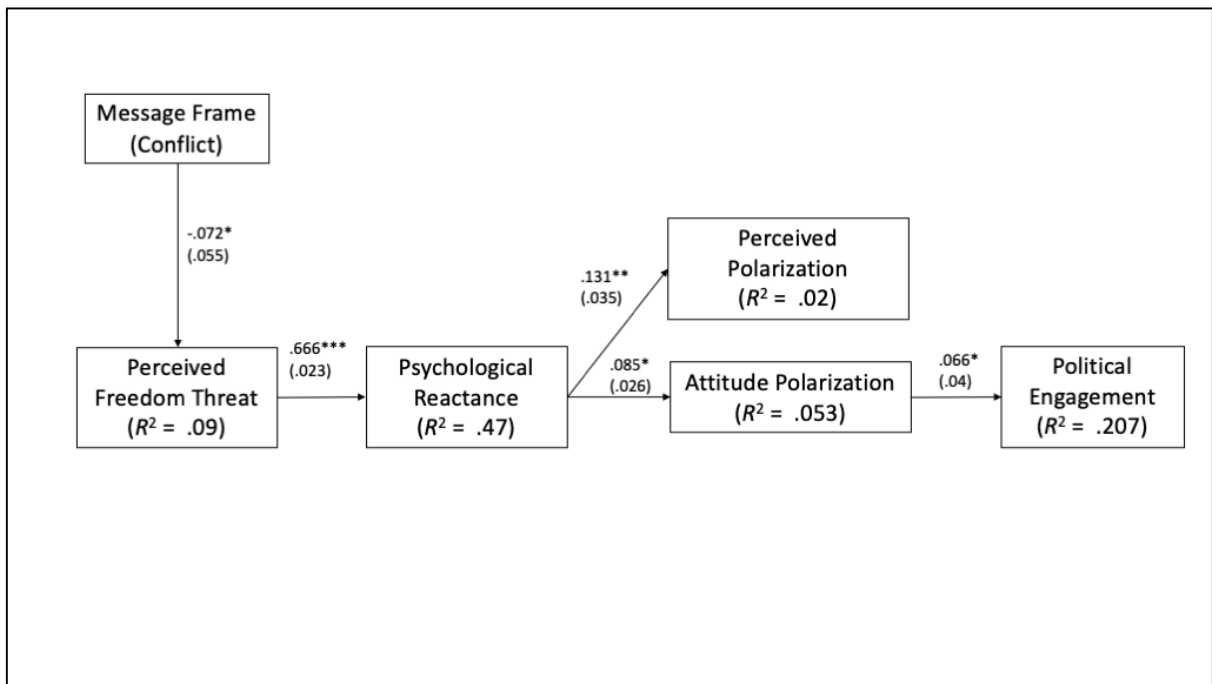
Figure 3. The path model estimation on the effects of message frame on political engagement (for the pooled data, the full models are reported in Table 9). Standardized coefficients are reported, with standard errors in the parenthesis.

The model-fit indices were $\chi^2 = 24.63$, $df = 22$, $p = .315$, CFI = .998, TLI = .996, RMSEA = .011 [0.000, 0.029], and SRMR = .018; valid n = 1065. The model was estimated using the *lavaan* 0.6-9 in R.
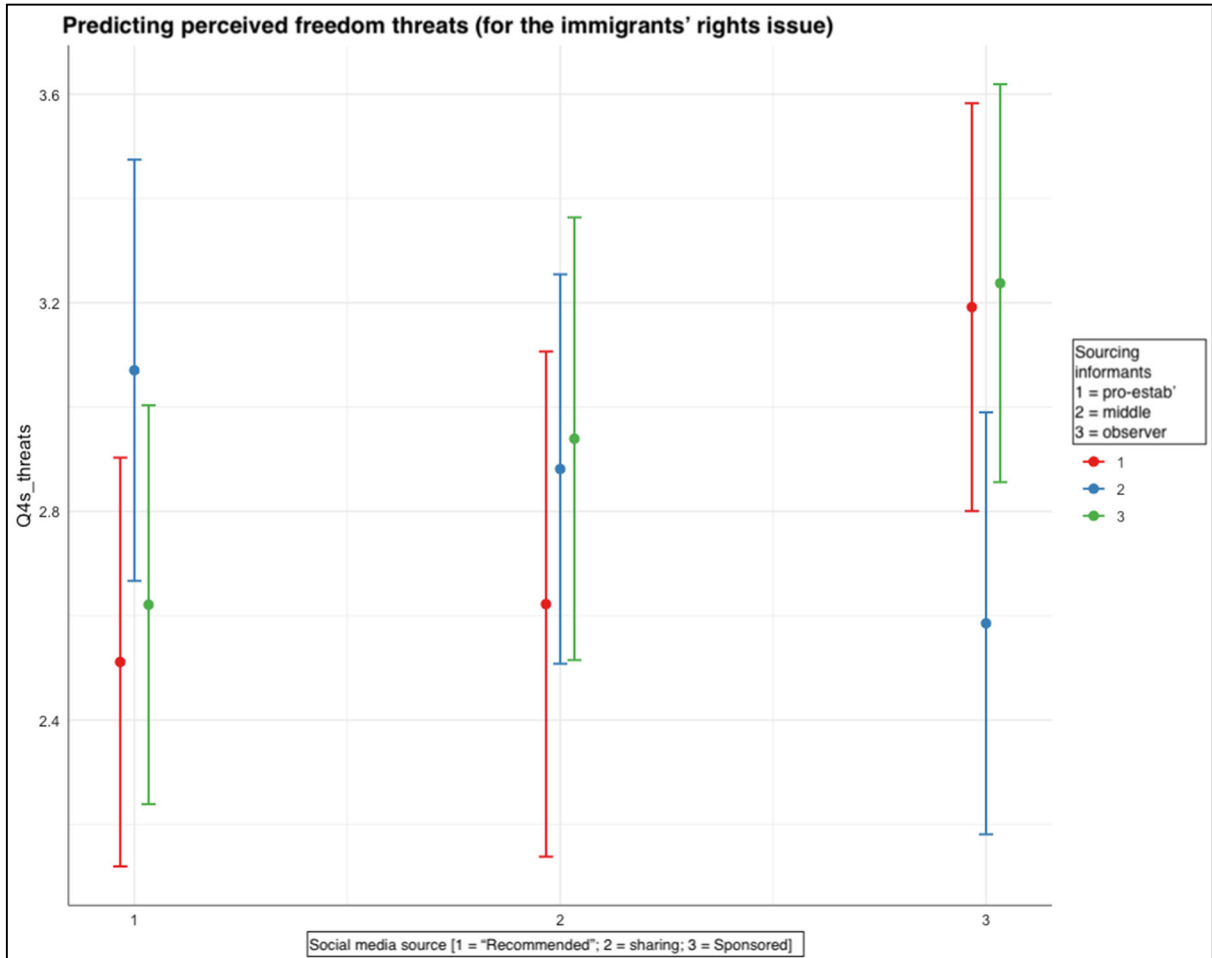
Figure 4. Plotting the Two-way Interaction Effect of Social Media Message Source and News Source on Perceive Freedom Threats (for the issue related to the immigrants' rights). The substantive content of the chart is plotted using the "sjPlot," "sjmisc," and "ggplot2" packages in R. Only the legend texts are added by the PI using the "Preview" application.
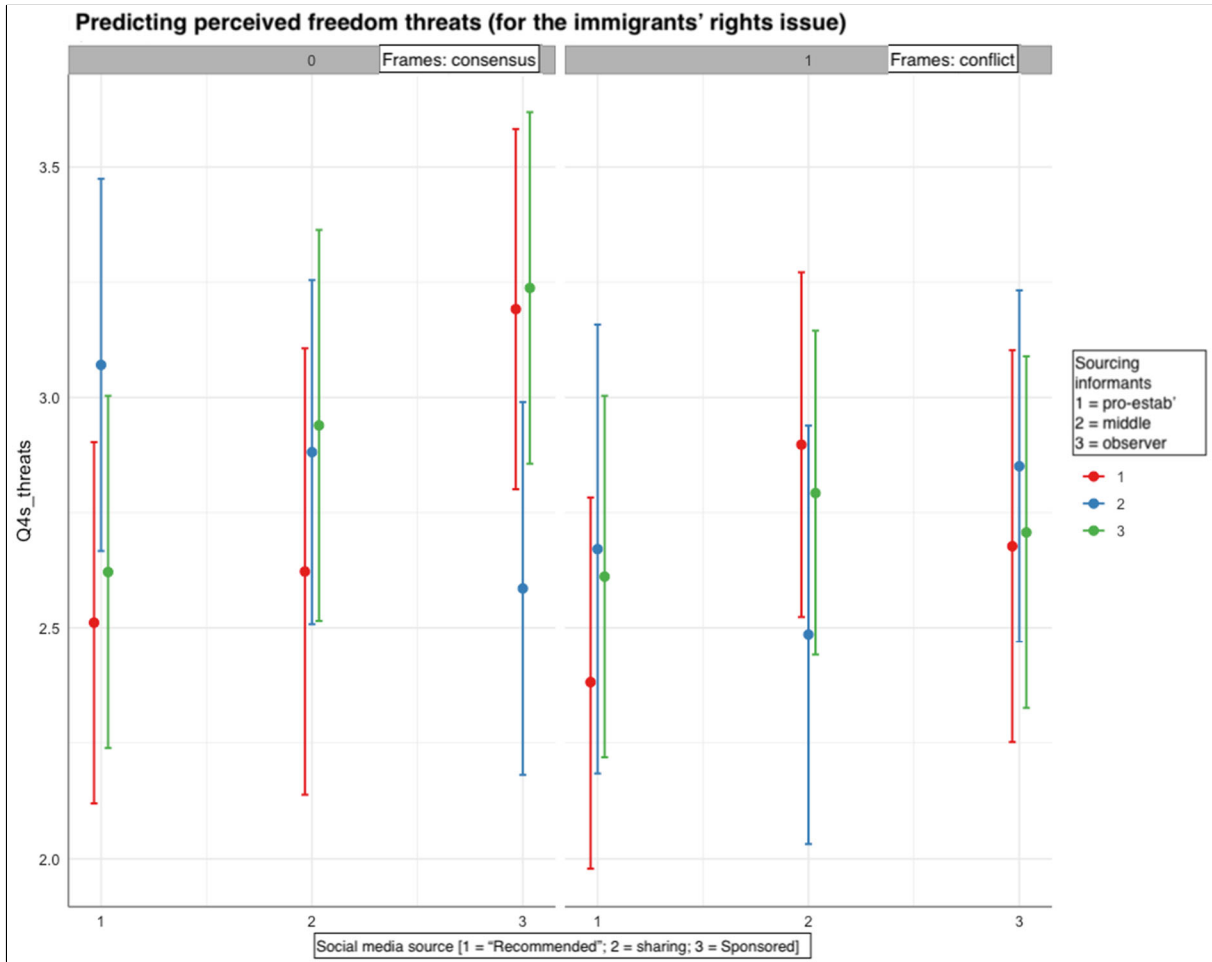
Figure 5. Plotting the Three-way Interaction Effect of Social Media Message Source, News Source, and Conflict Frames on Perceive Freedom Threats (for the issue related to the immigrants' rights). The substantive content of the chart is plotted using the "sjPlot," "sjmisc," and "ggplot2" packages in R. The legends, and only the legend texts are added by the PI using the "Preview" application.
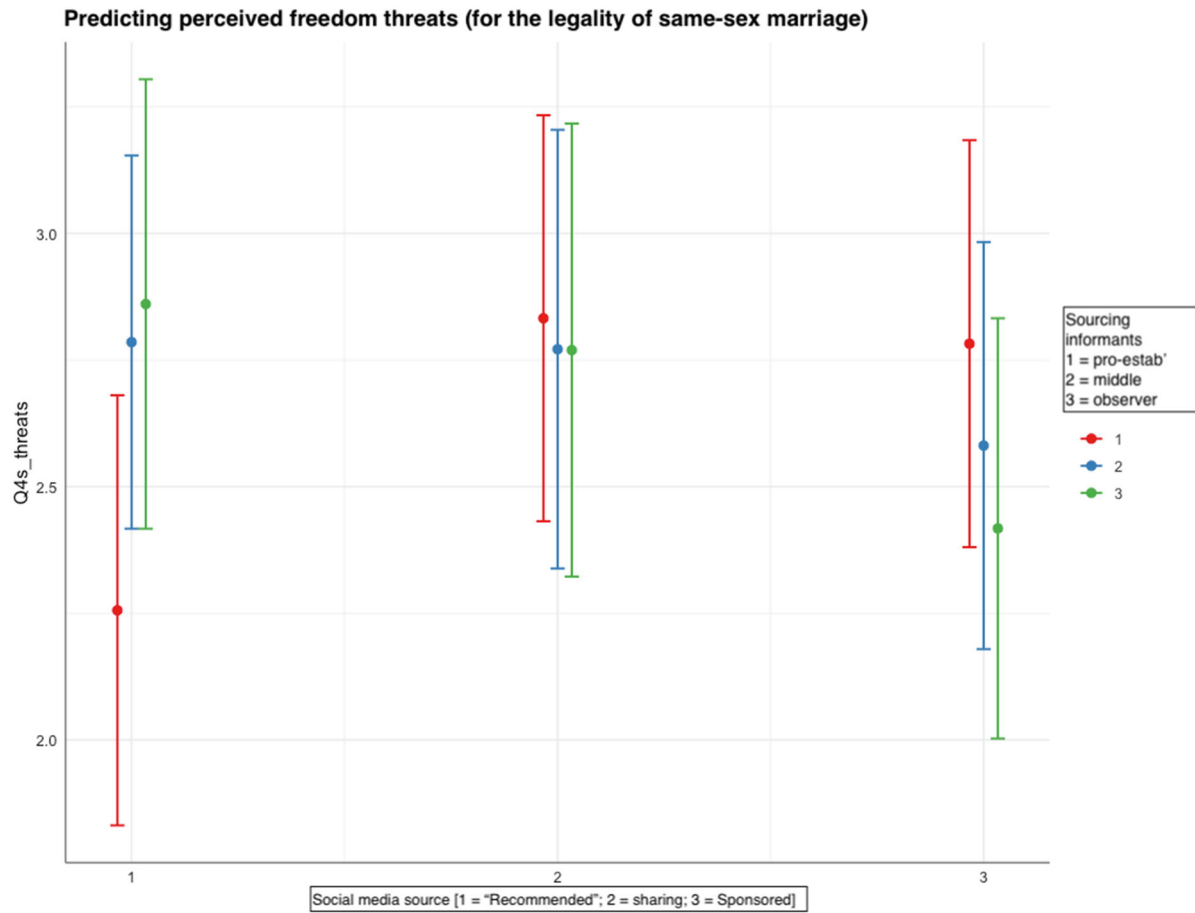
Figure 6. Plotting the Two-way Interaction Effect of Social Media Message Source and News Source on Perceive Freedom Threats (for the legality of same-sex marriage). The substantive content of the chart is plotted using the "sjPlot," "sjmisc," and "ggplot2" packages in R. Only the legend texts are added by the PI using the "Preview" application.

9. Appendix
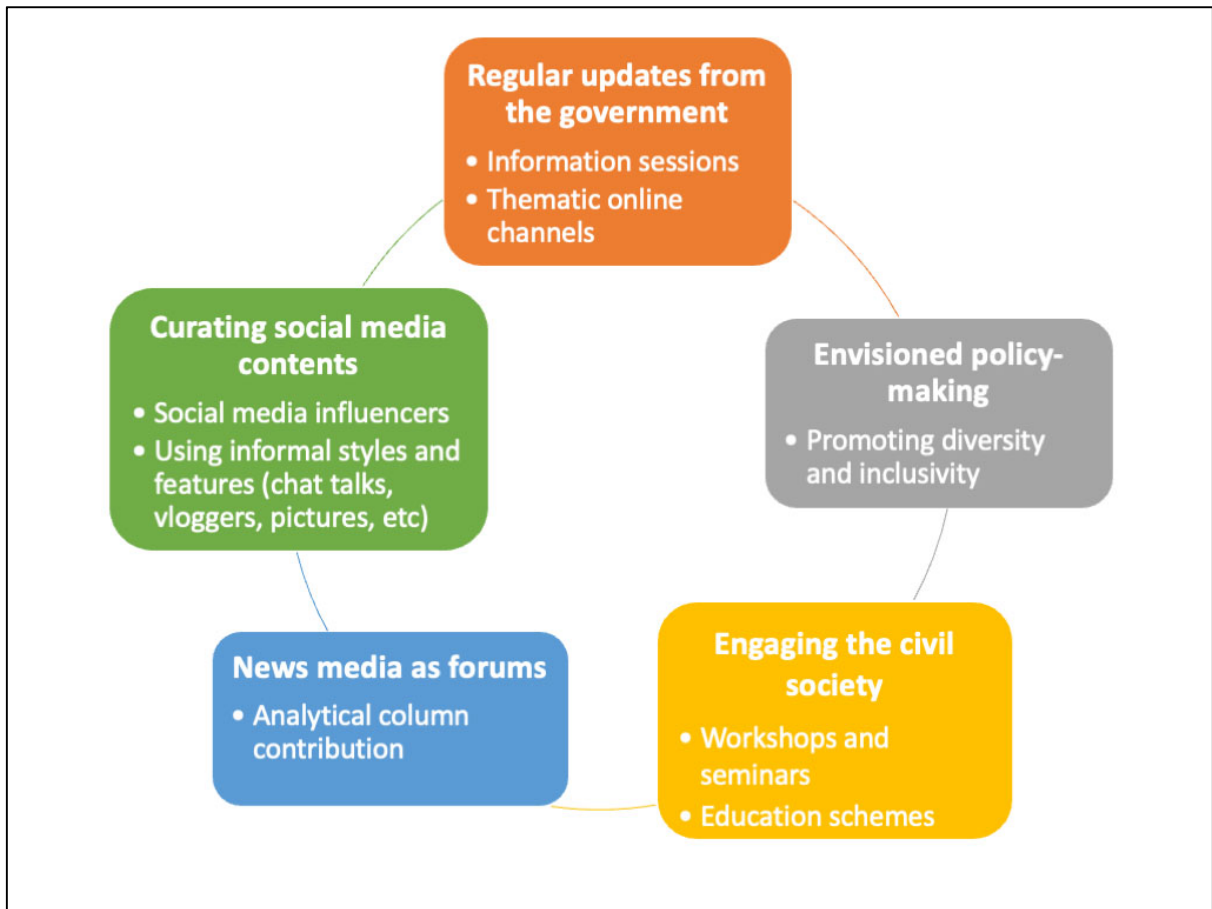
Figure S1-A. Analytical framework of policy recommendations (English)

Figure S1-B. Analytical framework of policy recommendations (Chinese)

Figure S2. A sample of vignette. It demonstrates the condition of the housing issue, system recommended, a pro-establishment political actor as the sourcing informant, the consensus frame

Figure S3. Open Seminars Poster on 29 Nov 2021

Figure S4. Workshop Poster on 29 Nov 2021

The Original Wordings of the Key Measurements in the Questionnaire (Chinese)

#Perceived freedom threats

讀完這則新聞后，您有多認同下列陳述？（1＝完全不認同；5＝非常認同）

		1	2	3	4	5
1	這則新聞威脅到了我的自主選擇權	○	○	○	○	○
2	這則新聞試圖為我做決定	○	○	○	○	○
3	這則新聞試圖操控我的行爲	○	○	○	○	○
4	這則新聞試圖給我造成壓力	○	○	○	○	○

#Reactance

讀完這則新聞后，您有多認同下列陳述？（1＝完全不認同；5＝非常認同）

		1	2	3	4	5
1	這則新聞讓我感到生氣	○	○	○	○	○
2	這則新聞讓我感到煩躁	○	○	○	○	○
3	這則新聞讓我感到惱怒	○	○	○	○	○
4	這則新聞讓我感到被激怒	○	○	○	○	○
5	這則新聞後我產生了負面想法	○	○	○	○	○
6	這則新聞試圖扭曲真相	○	○	○	○	○
7	這則新聞內容被誇大	○	○	○	○	○

#Perceived polarization

A對於填海以增加土地房屋供應的方案，以您的預估猜測，
以下不同人士對此方案是什麼態度？（1＝對此方案非常不贊同； 5＝
對此方案非常贊同）

		1	2	3	4	5
1	建制派政治人物	○	○	○	○	○
2	中間派政治人物	○	○	○	○	○
3	香港政府	○	○	○	○	○
4	普通香港市民	○	○	○	○	○
5	公司、企業、私營機構	○	○	○	○	○

B對於允許新移民（此處特指從內地來港定居未滿七年的人士）有權免費享用各項公
立醫療施和服務的方案，以您的預估猜測，以下不同人士對此方案是什麼態度？（1
＝對此方案非常不贊同； 5＝對此方案非常贊同）

		1	2	3	4	5
1	建制派政治人物	○	○	○	○	○
2	中間派政治人物	○	○	○	○	○
3	香港政府	○	○	○	○	○
4	普通香港市民	○	○	○	○	○
5	公司、企業、私營機構	○	○	○	○	○

C 對於同性婚姻合法化的方案，以您的預估猜測，
以下不同人士對此方案是什麼態度？（1＝對此方案非常不贊同； 5＝
對此方案非常贊同）

		1	2	3	4	5
1	建制派政治人物	○	○	○	○	○
2	中間派政治人物	○	○	○	○	○
3	香港政府	○	○	○	○	○
4	普通香港市民	○	○	○	○	○
5	公司、企業、私營機構	○	○	○	○	○

Attitude polarization
請您對以下的議題做出整體評價（1＝非常不贊同； 5＝非常贊同）

		1	2	3	4	5
1	香港2021年的財政預算	○	○	○	○	○
2	現時香港的土地房屋政策	○	○	○	○	○
3	現時香港針對外來移民權益的政策	○	○	○	○	○
4	香港政府針對2019「新型肺炎」的防疫措施	○	○	○	○	○
5	現時香港關於同性婚姻的法例	○	○	○	○	○
6	行政長官2021年施政報告	○	○	○	○	○

Affective polarization
您對以下人物或機構的看法 （1＝非常不喜歡； 5＝非常喜歡）

		1	2	3	4	5
1	建制派政治人物	○	○	○	○	○
2	中間派政治人物	○	○	○	○	○
3	跨國大型企業	○	○	○	○	○
4	本港娛樂明星	○	○	○	○	○
5	與親建制派意見向左的政治人物	○	○	○	○	○

Public engagement
未來一個月內， 您是否會進行以下行為？（0＝不會； 1＝會）

		不會（0）	會（1）
1	公開表達您對公共及社會議題的意見	○	○
2	簽署對公共及社會議題的請願書	○	○
3	向關注公共和社會議題的組織捐款	○	○
4	為社會議題關注小組傳播信息及廣告	○	○
5	參與社區、市政會議、公民論壇討論社區議題	○	○

- THE END OF THE REPORT -