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Does Political Orientation Affect the Evaluation of Artificial Intelligence?*

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In this study, we propose that political orientation is related to the evaluation of artificial intelligence. Using AI-based medical and legal service providers, we find that the more politically conservative consumers are, the more likely they are to have a lower evaluation of AI-based professional services. Furthermore, we find that the relationship between political conservatism and the evaluation of AI-based services is driven by the extent of the perceived threat that AI poses to human uniqueness. Other potential underlying factors such as the heightened need for control, gender, socioeconomic status, or technology familiarity do not explain this effect.

Keywords: political orientation, artificial intelligence (AI), identity threat, human uniqueness

Ⅰ. Introduction

The world is evolving quickly, and artificial intelligence (AI) is at the forefront of this change. From Fitbit's fitness tracker to IBM's Doctor Watson and AI Tech Support's Lawyer Lisa, human interactions with various AI services are expanding to every aspect of people's lives. For example, "Watson" can correctly diagnose even a disease that human doctors cannot detect (Poughkeepsie journal 2016). In another case, "Lisa" can provide highly professional legal advice without any time or space constraints (Tech Nation 2019).

However, people seem to hold wildly divergent views about the benefits and economic prosperity that AI technologies can create. The divergence

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in opinions regarding AI is well shown in a discussion on social media between the two most well-known entrepreneurs of Silicon Valley: Elon Musk and Mark Zuckerberg. In 2017, Elon Musk openly stated that AI poses a "fundamental risk to the existence of human civilization" and is "potentially more dangerous than nukes" in interviews and on social media (The Guardian 2017). Mark Zuckerberg, on the other hand, fervently disputed the comment, saying that AI fearmongering is "pretty irresponsible" (Inc. 2017). These conversations have stirred the public debate and political discourse regarding the potential benefits versus risks involving AI technologies. Finally, in December 2017, a bipartisan group of US senators and representatives introduced the Future of AI Act, the first federal bill solely focused on regulating AI technologies (GeekWire 2017). The development of this social discourse indicates that people have significantly different assessments about the benefits of AI. Moreover, such divergence may arise from the degree to which individuals believe that AI will eventually threaten humanity. That is, some people view AI as an entity with superior intelligence that can compete with, exceed, or even turn against the human race as a group, as often portrayed in dystopian movies. On the contrary, others view AI as the ultimate technological help needed to serve their goals.

Then, what factors can explain such individual differences in viewing AI as an outgroup entity that competes with us (humans) or as one of many helpful technologies? Previous research has suggested that political orientation, from conservative to liberal, can predict how much people value ingroupness or human essentialism (e.g., Hoyt, Morgenroth, and Burnette 2019; Iacoviello and Spears 2021). In this research, we propose that the more conservative people are, the less positively they will evaluate the value of AI-based services. Further, we propose that this relationship between political orientation and the evaluation of AI-based services may arise from the perceived threat that AI poses to human uniqueness.

Our findings can make important contributions to literature. First, whereas past research demonstrates that people avoid AI because they believe that it operates only in a standardized manner without autonomy (Dietvorst, Simmons, and Massey 2015; Longoni, Bonezzi, and Morewedge 2019), our work demonstrates that people avoid AI because they believe that it can pose a threat to humanity. Thereby, our work enhances the current understanding of how consumers avoid AI services.

Also, our work contributes to prior work on the effects of political orientations in consumption domains. Researchers have attended the significance of individuals' political orientations as a potent predictor for a wide range of product and brand preferences (Jost 2017; Kim, Park, and Dubois 2018). Our work extends this line of research by examining how consumers' political

orientation can shape their attitudes toward AI-based services. Our work also provides practical recommendations on which customer sociodemographic segment is better to target for a smoother launch of AI-based services and how marketers can alleviate algorithm aversion that some consumers may experience.

Ⅱ. Theoretical Background

2.1 AI as a Threat

AI can be broadly defined as "a branch of computer science dealing with the simulation of intelligent behavior in computers" (Merriam-Webster.com 2021). AI consists of any software, program, or machine that simulates human intelligence processes, and can therefore perform on behalf of humans. Underpinned by machine-learning technologies, artificial intelligence has dramatically caught up to or, in some domains, even exceeded human performance. AI is becoming remarkably human-like to the extent that it can sense, predict, produce, and communicate with humans (Puntoni et al. 2021).

Despite its human-like characteristics, people seem to think that AI does not share the same group membership with them. Instead, people tend to consider AI an outgroup entity that can pose a potential threat. Coupled with the advancement of robotics, AI can trigger people's concern that it can ultimately displace the human workforce (Puntoni et al. 2021; Sassen 2014). This concern is similar to the preoccupation about non-human entities such as autonomous robots (Zlotowski, Yogeeswaran, and Bartneck 2017).

Previous research suggests that AI can evoke two types of psychological threat: a *realistic threat* and an *identity threat*. A realistic threat refers to a threat directed at one's material resources, safety, or physical well-being (Riek, Mania, and Gaertner 2006; Stephan, Ybarra, and Bachman 1999). It is relatively immediate, direct, and tangible (Stein, Liebold, and Ohler 2019). In this sense, AI can be viewed as a realistic threat to people if it can reduce their monthly income, increase unemployment, or induce any other harm to human safety (Yogeeswaran et al. 2016). Thus, a realistic threat may emerge in the context where individuals experience a direct loss or damage to themselves.

On the other hand, identity threats refer to symbolic threats to human uniqueness (Riek, Mania, and Gaertner 2006). Social identity theory suggests that individuals are motivated to perceive their own group as positively distinct from others (Tajfel and Turner 1986). Identity threats occur when a group's uniqueness, values, and distinctiveness are invaded by outgroup members (Riek, Mania, and Gaertner 2006; Stephan, Ybarra, and Bachman 1999; Zlotowski, Yogeeswaran, and Bartneck 2017). Previous

research suggests that human uniqueness traits involve cognitive traits such as being logical or rational, which separate humans from other entities (Loughnan and Haslam 2007; Haslam and Loughnan 2014). Other human traits such as warmth or loyalty can be shared with animals (i.e., "human nature traits"). However, these cognitive traits are deemed as unique and distinguishable human characteristics. Interestingly, according to recent research, people believe that machines share human uniqueness traits with humans (Haslam and Loughnan 2014). Because AI represents technologies that emulate human intelligence, it is not surprising that people regard AI as entities sharing human uniqueness traits with humans. This notion of AI as having superior intelligence may easily evoke feelings of identity threat to people who are more likely to value ingroupness and human essentialism. They may see AI as an outgroup, which violates the distinct boundary between humanness and other entities. Supporting this notion, previous research finds that individuals are less favorable toward machines that outperform humans in chess games or problem-solving tasks due to identity threats (Yogeeswaran et al. 2016).

2.2 Political Conservatives and Identity Threats Posed by AI

In this research, we propose that as consumers are more politically conservative, they are more likely to perceive a threat from AI to human uniqueness, and this perceived threat may lower their evaluation of AI services. The reasons for this perceived threat are as follows:

First, political conservatism may relate to the tendency to categorize humans as a different social group from AI. Previous research on social essentialism suggests that political conservatives focus on a group's essence and categorize social groups, compared to political liberals (Hoyt, Morgenroth, and Burnette 2019). Conservative people also pursue group-level qualities such as loyalty to maintain group cohesion and social order (Capara et al. 2006; Graham, Haidt, and Nosek 2009) and put great effort into bringing people together and forming a tightly knit ingroup community (Graham et al. 2011).

Second, political conservatism may entail people's sensitivity to potential threats posed by AI. Previous research has demonstrated that political conservatives tend to have strong ingroup favoritism (Iacoviello and Spears 2021) and act preventively to stave off harm that may occur to their group (Janoff-Bulman 2009). For example, political conservatives tend to perceive a higher threat from immigrants (e.g., Batalha, Akrami, and Ekehammar 2007; Stewart and Morris 2021) or other countries in conflict, compared to the political liberals (De Zavala et al. 2010). In addition, political conservatives tend to have a strong social dominance orientation, which supports obedience to entities in higher positions along the social strata (Jost et al.

2003, 2007). Given that AI is now well-known for its superintelligence, political conservatives may feel threatened because AI can occupy higher positions in the social hierarchies and can subsequently marginalize humans.

Taken together, we hypothesize that as consumers are more politically conservative, they are more likely to perceive the threat of AI to human uniqueness. This perceived threat, in turn, may lower their evaluation of AI services. Formally,

H1: The more politically conservative consumers are, the lower they will evaluate the potential value of artificial intelligence services (AI).

H2: The perceived threat of AI technology to human uniqueness will mediate the relationship between political conservatism and the evaluation of AI services.

Ⅲ. Study

In this study, we aimed to examine whether political conservatism can explain how people evaluate the potential value of AI services. Furthermore, we attempted to identify the underlying factor that can explain the proposed relationship between political conservatism and the evaluation of AI services. Specifically, we tested hypotheses proposing that as consumers are more politically conservative, they are more likely to lower their evaluation of AI services because they perceive a greater threat of AI to human uniqueness. In order to test these hypotheses, we used AI services in the medical and legal domains.

We also aimed to rule out other factors that can explain the relationship between political conservatism and the evaluation of AI services. To do so, we focused on two other factors that might influence technology acceptance: consumers' socioeconomic status and familiarity with technology (Cui and Im 2021; Han and Park 2016; Meuter et al. 2005). Also, we included another factor, the need for control, to rule out an alternative account. Political conservatives are reluctant to tolerate uncertainty and have a strong desire to maintain control (Fernandes and Mandel 2014; Jost et al. 2003, 2007). Thus, one could argue that political conservatives may lower their evaluation of AI services not because AI threatens them, but because they see greater uncertainty, room for error, or less control over potential outcomes, compared to services provided by humans (i.e., "algorithm avoidance," Dietvorst, Simmons, and Massey 2015).

3.1 Method

3.1.1 Participants

We recruited 343 participants from Amazon's

Mechanical Turk in exchange for a small reward (M_{age} = 32.32, SD = 11.39; N_{female} = 150, N_{male} = 190, N_{other} = 3). We included three comprehension check questions to ensure that the participants paid attention (e.g., "What was the name of the AI lawyer mentioned above?"). We eliminated fifty-two participants who failed these checks and one who answered 7 to all questions, leaving behind a final sample of 290 participants (M_{age} = 31.25, SD = 11.73; N_{female} = 135, N_{male} = 152, N_{other} = 3). We continued to analyze and report the results using 290 participants.

3.1.2 Design and procedure

To ensure that the participants had a clear and common definition of AI, they first read a brief and straightforward explanation of AI technology (see the Appendix). The participants then read descriptions of two AI services well-known for their capabilities – AI doctor "Watson" and AI lawyer "Lisa." Using the actual AI services, we aimed to establish credibility in the information presented to the participants. Specifically, we described that the AI doctor Watson can analyze vast amounts of data and diagnose accurately; the AI lawyer Lisa creates legal documents and analyzes legal cases within minutes. The order of Watson and Lisa was randomized.

After reading each AI service description, the participants evaluated the potential value of AI by responding to six questions on a 7-point scale ("How favorable are you toward Watson [Lisa]?," "To what extent do you think Watson [Lisa] is useful?," "To what extent do you think Watson [Lisa] is helpful?"; 1 = *not at all*, 7 = *very much*). Next, they rated the perceived threat of AI technology to human uniqueness on a 7-point scale using two items ("Advances in AI technology should challenge the very essence of what it means to be human" and "Technological advancements in the area of AI are threatening human dignity"; 1 = *strongly disagree*, 7 = *strongly agree*; Yogeeswaran et al. 2016). The participants also answered 20 items taken from the need for control scale to test an alternative account (Burger and Cooper 1979). Finally, the participants reported their political orientation on a 7-point scale (1 = *very liberal*, 7 = *very conservative*). The survey ended with questions regarding perceived familiarity with technology and demographic information.

3.2 Results

3.2.1 Preliminary analyses

We summarized the means and the standard deviations of focal and control variables in Table 1. All the variables were on a 1-7 scale, except for objective socioeconomic status (SES) scores. We calculated objective SES scores by standardizing (Z scores) income and education

〈Table 1〉 Means and standard deviations of focal and control variables

		Mean	SD	Range of data
1	Political Orientation	3.57	1.67	1 - 7
2	Technology Familiarity	5.68	1.07	1 - 7
3	Objective SES	.009	1.54	-3.45 - 3.91
4	Need for Control	5.06	0.68	1 - 7
5	Perceived Threat	3.59	1.49	1 - 7
6	Overall AI Evaluations	5.08	1.29	1 - 7
	Evaluation of Watson	5.20	1.40	1 - 7
	Evaluation of Lisa	4.96	1.53	1 - 7

〈Table 2〉 Correlations among measures

		1	2	3	4	5	6
1	Political Orientation						
2	Technology Familiarity	-.009					
3	Objective SES	.108	.006				
4	Need for Control	.124*	.298**	.119*			
5	Perceived Threat	.213**	-.096	-.196**	-.007		
6	AI Evaluation	-.137*	.136*	-.060	-.054	-.186**	

Note. * indicates $p < .05$, ** indicates $p < .01$, *** indicates $p < .001$

and adding the standard scores (Cohen, Doyle, and Baum 2006). We also examined variables' correlations. As shown in Table 2, political orientation and other alternative variables that can influence the evaluation of AI services were not intercorrelated (rs 〈 .109, *ns*).

3.2.2 Evaluation of the potential value of AI services

In this research, we propose that the more politically conservative consumers are, the lower they will evaluate the potential value of artificial intelligence services (AI). To test this key hypothesis, we created an overall evaluation index of AI services by averaging the six items (α = .909 overall; α = .935 for Watson only; α = .932 for Lisa only). As noted earlier, the participants expressed their evaluations of Watson and Lisa, respectively, in random order. However, since the genders that the AI-services names indicate differ (i.e., Watson for male yet Lisa for female), we first tested whether the effect of political orientation on AI evaluations differs depending on the type of AI services. A repeated measures ANCOVA showed that the evaluation of Watson (M = 5.20, SD = 1.40) was generally higher than Lisa (M =

4.96, SD = 1.53; F(1, 288) = 9.51, p = .002). However, more importantly, the interaction between AI type and political orientation was not significant (F(1, 288) = 3.61, p = .058). These results showed that people did not respond differently depending on the type of AI (Watson or Lisa) as a function of their political orientations. In addition to this, the effect of our key variable, political orientation, explained significant variance in the model (F(1, 288) = 5.5, p = .020). For these reasons, we merged participants' evaluations of two AI-services for the purpose of parsimony (r = .56, p < .01, M = 5.08, SD = 1.29).

Next, we tested the first hypothesis by building two-steps regression models (see Table 3; e.g., Kim and Kim 2014). First, we regressed the evaluation of AI services index on political orientation. Consistent with the hypothesis, we found that as people rated themselves as being more politically conservative, they evaluated the potential value of AI services less positively (β = -.11, t(288) = -2.34, p = .020). Second, we regressed the evaluation of AI services index on political orientation, with objective SES, technology familiarity, and gender (female = 1, male = 0)[1] as control variables. As expected, the effect of political conservatism on the AI-service evaluation remained significant (β = -.11, t(282) = -2.32, p = .021). The effect of technology familiarity on consumers' evaluation of AI services was also significant (β = .15, t(282) = 2.03, p = .043). It is not surprising that knowledge-based familiarity increases consumers' acceptance of technology (Gefen, Karahanna, and Straunb 2003). There were no other variables that significantly affected the evaluation of the potential value of AI services. These results suggest that political orientation can predict people's evaluation of the potential value of AI-based services. Specifically, as the more politically conservative consumers are, the lower they will evaluate the potential value of artificial intelligence services (AI).

〈Table 3〉 Results of the regression analysis: The evaluation of the potential value of AI services

Variables	Model 1: Political Orientation	Model 2: Controls
Control Variables		
Gender	-	-.10 (.16)
Objective SES	-	-.03 (.05)
Technology Familiarity	-	.15* (.07)
Main Variables		
Political Orientation	-.11* (.05)	-.11* (.05)
Constant	5.46*** (.18)	4.68*** (.47)
Adjusted R^2	**.015**	**.025**

Note: N = 290. Robust regression coefficients are reported together with standard errors in parentheses.
* p < .05
** p < .01
*** p < .001, significance levels are two-tailed.

1) Gender was dummy-coded (female = 1, male = 0), and three participants (1.03%) who chose "other" were classified as missing values.

3.2.3 The perceived threat of AI to human uniqueness

In this research, we propose that as consumers are more politically conservative, they are more likely to perceive the threat of AI to human uniqueness. This perceived threat, in turn, may lower their evaluation of AI services.

To test these hypotheses, we averaged two items on the perceived threat of AI to human uniqueness and created an index (M = 3.59, SD = 1.49; r = .31, $p < .01$). Similar two-steps regression models were also used in this analysis (see Table 4). First, we regressed the perceived threat index on political orientation. Consistent with the hypothesis, we found that as people rated themselves as being more politically conservative, they were more likely to perceive a greater threat of AI to human uniqueness (β = -.19, t(288) = 3.71, $p < .001$). Second, we regressed the perceived threat index on political orientation, controlling objective SES, technology familiarity, and gender. Political orientation remained significant (β = .21, t(282) = 4.18, $p < .001$), although objective SES (β = -.24, t(282) = -4.37, $p < .001$) emerged significantly in the model. These findings support our prediction that political orientation can predict the extent to which people feel threatened by AI technologies in terms of human uniqueness. Specifically, as people are more politically conservative, they are more likely to perceive the threat of AI to human uniqueness.

〈Table 4〉 Results of the regression analysis: The perceived threat of AI to human uniqueness

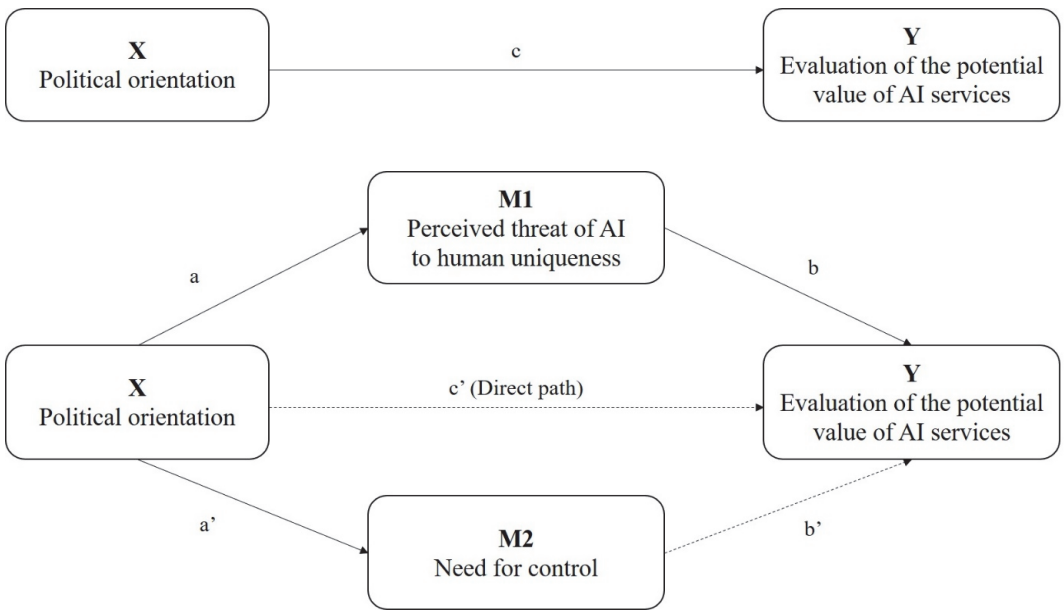
Variables	Model 1: Political Orientation	Model 2: Controls
Control Variables		
Gender	-	.33 (.17)
Objective SES	-	-.24*** (.06)
Technology Familiarity	-	-.09 (.08)
Main Variables		
Political Orientation	.19*** (.05)	.21*** (.05)
Constant	2.91*** (.20)	3.23*** (.52)
Adjusted R^2	**.042**	**.103**

Note: N = 290. Robust regression coefficients are reported together with standard errors in parentheses.
* $p < .05$
** $p < .01$
*** $p < .001$, significance levels are two-tailed.

Next, we conducted mediational analyses. We performed a bootstrapping mediation analysis with 10,000 samples (PROCESS Model 4, Hayes and Preacher 2014). We included political orientation as the independent variable, the perceived threat of AI to human uniqueness as the mediator, and evaluation of AI services as the dependent variable in the regression model. As a result, we found the predicted mediation effect. That is, the stronger consumers rated themselves as being politically conservative, the greater the threat of AI they perceived to human uniqueness, leading to a less positive evaluation of AI services (indirect effect = -.0273, SE = .0135, 95% CI: [-.0569, -.0050]).

One could argue that political conservatives may lower their evaluation of AI services not because AI threatens them, but because they see greater uncertainty, room for error, or less control over potential outcomes, compared to services provided by humans (i.e., "algorithm avoidance," Dietvorst, Simmons, and Massey 2015). To eliminate this alternative account, we conducted another mediation analysis using the need for control as the mediator. Twenty items were averaged to form a need for control index ($M = 5.06$, $SD = .68$; $\alpha = .80$). We included political orientation as the independent variable, the need for control as the mediator,

〈Figure 1〉 The mediation effect of the perceived threat of AI to human uniqueness



Model-path Estimates				
	Coefficient	SE	t	*p*
a	**.19**	**.05**	**3.71**	**〈.001**
b	**-.14**	**.05**	**-2.81**	**〈.01**
a'	**.05**	**.02**	**2.12**	**〈.04**
b'	-.08	.11	-.74	〉.45
c	**-.11**	**.05**	**-2.34**	**〈.03**
c'	-.07	.05	-1.61	〉.10
Indirect effect (with Bootstrap 95% Confidence Interval and Standard Errors)				
	Effect	LL 95% CI	UL 95% CI	SE
X → M1 → Y	**-.03**	**-.07**	**-.01**	**.02**
X → M2 → Y	-.00	-.02	.01	.01

and the evaluation of AI services as the dependent variable in the regression model. As predicted, the need for control did not mediate the effect of political orientation on evaluation of AI services (indirect effect = -.0036, SE = .0066, 95% CI: [-.1928, .0084]). Specifically, as people are more conservative, the higher their need for control becomes (β = .05, t(288) = 2.12, p = .035; Fernandes and Mandel 2014; Jost et al. 2003, 2007). However, the need for control does not relate to people's evaluation of AI services (β = -.07, t(288) = -.64, p = .524). Furthermore, when both the perceived threat of AI and the need for control were simultaneously set as the mediators, only the perceived threat of AI emerged as a significant mediator in the model (indirect effect = -.0276, SE = .0135, 95% CI: [-.0580, -.0055]), whereas the need for control did not (indirect effect = -.0042, SE = .0067, 95% CI: [-.0199, .0068], see Figure 1).

To sum, the mediation analyses showed that the perceived threat of AI to human uniqueness is a potent mediator, explaining the relationship between political orientation and the evaluation of the potential value of AI services.

3.3 Discussion

Throughout multiple analyses, this study suggested that the more politically conservative consumers are, the lower their evaluations are regarding the potential value of AI because they perceive AI technologies as being more threatening to human uniqueness. In addition, this study successfully ruled out the alternative explanation regarding the need for control.

Ⅳ. General Discussion

Our research suggests that the more politically conservative consumers are, the more likely they are to underestimate the potential value of AI. The perceived threat of AI technologies to human uniqueness drives such an aversion to AI services. We also eliminate other compelling alternative factors such as the heightened need for control, socioeconomic status, gender, and technology familiarity in explaining the relationship between political orientation and the evaluation regarding the potential value of AI services.

The current research makes several contributions to the literature. First, our work identifies a novel psychological driver of consumer avoidance in terms of using AI services. Reluctance to rely on information provided by AI in making judgments is referred to as *algorithm aversion* (Dietvorst, Simmons, and Massey 2015). Previous research has suggested that algorithm aversion occurs because people believe that AI operates only in a standardized manner without autonomy (Dietvorst, Simmons, and Massey 2015; Longoni,

Bonezzi, and Morewedge 2019). Therefore, it is prone to making more errors than humans (Dietvorst, Simmons, and Massey 2015). By empirically investigating the role of human uniqueness as the underlying resistance to AI, we extend the existing literature on algorithm aversion. That is, we suggest that the perceived threat to humanity can be an essential factor in terms of explaining algorithm aversion.

Second, our findings highlight the importance of political orientation in shaping consumers' perceptions and reactions toward AI. The current research demonstrates that political conservatives are more sensitive to threats to human uniqueness. Future research can also probe whether human nature traits such as warmth can generate identity threat among political liberals, given that human nature abilities are generally associated with the liberal orientation (Crawford, Modri, and Motyl 2013).

Third, we suggest that political conservatives are more likely to view AI as an outgroup to humans. Future research can examine whether political conservatives consider AI an outgroup that has high group entitativity and that competes with humanity. Future research could also investigate whether political conservatives are more likely than political liberals to believe that AI and humans are different. Doing so should deepen our understanding of political orientation and the resistance to AI.

4.1 Practical Implications

Understanding which and how consumers tend to underestimate the potential value of AI-based services has useful practical implications. Above all, our work suggests that individuals' political orientations can be a useful sociodemographic characteristic for segmenting the market for AI-based services. Recently, researchers have attended the significance of individuals' political orientations as a potent predictor for a wide range of product and brand preferences (Jost 2017; Kim, Park, and Dubois 2018). At the same time, consumers' political orientations increasingly become an easy-to-measure variable. For instance, people often express their political orientations via opinion polls, actual voting behaviors, and support for particular political issues or figures on social media. Accordingly, marketers can access behavioral data based on voting statistics of electoral districts or digital footprints on social media (e.g., Boutyline and Willer 2017; Rentfrow et al. 2013). According to our findings, liberals are a better target to start for AI-based services. Thus, marketers can conduct marketing campaigns on media favored by liberals for the smoother launch of AI-based services.

In addition, our findings yield insights into types of interventions that can increase acceptance of AI services. According to McKinsey and Company, AI technology will deliver additional economic activity worth $13 trillion by 2030

(Bughin et al. 2018). Also, AI can provide underprivileged people with professional services, including medical care and legal advice, at a lower cost (Smithsonian magazine 2019). In this sense, alleviating consumers' aversion to AI services can be beneficial for enhancing many consumers' welfare. Drawing on our findings, using some cues that can present AI as an ingroup member in communications can mitigate consumers' aversion to AI services. For example, recent work suggests that simple language variations such as "we," "us," "together" that imply closeness enhance brand evaluations (Sela, Wheeler, and Sarial-Abi 2012). Thus, seemingly inconsequential modifications in the communications about AI-based services may reduce the perceived threat that AI technologies pose to politically conservative consumers.

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〈Appendix〉

A Brief Explanation of AI Technology