Privacy Perceptions and Behaviors Towards Targeted Advertising on Social Media: A Cross-Country Study on the Effect of Culture and Religion

Smirity Kaushik
University of Illinois Urbana-Champaign
smirity2@illinois.edu

Tanusree Sharma
University of Illinois Urbana-Champaign
tsharma6@illinois.edu

Yaman Yu
University of Illinois Urbana-Champaign
yamanyu2@illinois.edu

Amna F. Ali
amna.farzand@gmail.com
University of Illinois Urbana-Champaign
amna.farzand@gmail.com

Bart Piet Knijnenburg
Clemson University
bartk@clemson.edu

Yang Wang
University of Illinois Urbana-Champaign
yvw@illinois.edu

Yixin Zou
Max Planck Institute for Security and Privacy
yixin.zou@mpi-sp.org

Abstract

Social media platforms are an effective channel for businesses to reach potential audiences through targeted advertising. As the user base of these platforms expands and diversifies, research on targeted advertising and social media needs to go beyond well-studied Western contexts. In an online survey (n=412), we compared users' privacy-related perceptions and behaviors regarding targeted ads on social media in the United States (as a baseline representing Western contexts) and three South Asian countries: Bangladesh, India, and Pakistan. We found that participants in the US perceived significantly fewer benefits and more concerns related to security and privacy about targeted ads than those in the three South Asian countries. We also identified that individual's cultural values and religious affiliations influenced the observed cross-country variances. For instance, US participants identified less with vertical collectivism and vertical individualism than South Asian participants; these two cultural dimensions were, in turn, positively associated with perceived benefits. Our findings highlight the limitation of using one's country as a proxy for culture, as our findings show users' privacy perceptions regarding targeted advertising on social media are more fundamentally associated with their cultural values and religion. We discuss the corresponding design, education, and regulatory implications for targeted advertising on social media.

Keywords

usable privacy, social media privacy, targeted advertising, cross-cultural privacy

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1 Introduction

Social media platforms help advertisers reach their audiences through targeted advertising. With the global social media advertising market projected to reach $358 billion by 2026 [101], the user base on these platforms is continually expanding and diversifying. For instance, India has the second largest number of social media users in the world, exceeding the US, which currently ranks third [106]. However, increased targeted ads can disrupt user experience of using social media platforms, causing privacy violations of intrusion to one's tranquility in a digital medium [97], in addition to other privacy concerns [62, 115, 116, 133]. Despite the growing social media user base in South Asia,[1] South Asian countries remain largely underrepresented in existing usable privacy and security research [41]. Prior work has also identified unique privacy concerns and challenges of users in these regions due to cultural norms such as device sharing [4, 83, 90, 107]. Moreover, we see the need to go beyond the predominantly small-scale qualitative research in South Asia [121] and draw insights from geographically diversified populations to pursue more generalizable results. Additionally, prior cross-cultural privacy and security research mostly used the country as a proxy for culture [42, 87, 125], while recent work cautioned against this assumption [34], as individuals in a given country can still exhibit vastly different cultural values. Religion is another construct closely related to culture. Yet how religion shapes users' privacy concerns and online disclosure on social media has been explored qualitatively [1, 3] but rarely quantitatively.

In an online survey with 412 participants, we examined users' privacy-related perceptions and behaviors related to targeted ads on social media platforms in the US and three South Asian countries—India, Bangladesh, and Pakistan, also taking participants' cultural dimensions and religion into account to provide further insights

[1] South Asia refers to the sub-Himalayan region of eight countries: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka [112].

into cross-country variances. Our study provides insights into the following research questions:

RQ1: What are participants' perceptions and behaviors related to ads on social media across the four countries?

Most participants perceived the benefits of targeted ads helping them find new products and support small businesses. Concerns related to security and privacy issues (e.g., fraudulent advertising and advertisers selling user data to third parties) were more prominent than those related to ad quality. In terms of behavior, participants reported scrolling past ads, hiding ads, and turning off notifications as their most frequently used strategies.

RQ2: How do participants' perceptions and behaviors related to ads on social media differ across the four countries?

We found distinct patterns between participants in the US versus the three South Asian countries: US participants perceived targeted ads on social media as less beneficial and were more concerned about their security and privacy issues. While we did not find significant cross-country differences in the adoption rate of ad management behaviors overall, when examining each behavior individually, Indian participants were less likely to use the *"hide ad"* feature or *turn off ad-related notifications and comments*.

RQ3: To what extent do culture and religion explain the cross-country variances in perceptions and behaviors?

We identified culture and religion as the underlying mediating variables that influence cross-country differences in perceived benefits and some of the concerns. Participants across the four countries significantly differed in their religious affiliations and two cultural dimensions (vertical collectivism and vertical individualism). In turn, there was a significant association between religion and perceived benefits; both vertical individualism and vertical collectivism positively influenced perceived benefits.

Our research contributes novel insights in comparing South Asian vs. US users' privacy perceptions and behaviors for targeted advertising on social media, showing that their patterns indeed differ, and cultural dimensions and religion are part of the underlying explanations. Our findings underscore the need to delve deeper into cross-country differences and the importance of differentiating individual vs. country-level instruments for measuring cultural dimensions. We conclude with practical implications for social media platforms and regulators to mitigate the potential harms of targeted advertising and offer users safer ad-related experiences.

2 Related Work

We summarize prior work on targeted advertising along three dimensions central to our research questions: user perceptions, user behaviors, and the role of culture and religion.

2.1 User Perceptions

Prior work has documented user perceptions of targeted advertising as a double-edged sword [62, 115, 116]. Users appreciate how targeted ads help them find relevant information [61] and connect them to small businesses [90]. They also understand targeted advertising as a necessary business model [62]. Nevertheless, prior research has shown rich evidence of users' dislike of targeted advertising due to privacy concerns and perceptions of the ad ecosystem being creepy and invasive [27, 62, 115, 116, 131], especially when the targeting happens out of context or when companies infer sensitive attributes such as health and financial status [76]. Users' concerns can also occur when ads cause material harms such as scams and malware [58, 90, 109], and they consider online advertising problematic when the ads are click-baiting, distasteful, or pushy/manipulative [135].

Another topic that attracts increasing concerns among users is algorithmic discrimination in targeted advertising [10, 49, 74, 98, 123]. Prior work has identified examples of gender discrimination when platforms promote certain high-paying jobs significantly more to men than women [21], racial discrimination when ads suggestive of arrest records appearing more often with searches of black-sounding names [110], and ads targeting sensitive topics like health and religion despite regulations that ban such practices [14]. Users find ad discrimination problematic, especially discrimination based on explicit demographic targeting rather than online behavior [74]. There are also demographic disparities in individuals' exposure to harmful ad content, as older adults and racial minorities in the US have been found to encounter problematic ads on Facebook more often than other groups [6]. Ad content can also be particularly harmful to LGBTQ+ individuals with its lack of queer representation and tokenizing nature [84].

We draw from prior work [6, 90, 135] to measure a comprehensive coverage of perceived benefits and concerns in our study, while also situating such perceptions with an individual's own country of origin, cultural dimensions, and religion.

2.2 User Behaviors

Social media companies provide numerous features and/or settings to help users manage targeted ads on their platforms [132] such as hiding an ad, reporting an add, or adjusting settings on a dedicated "Ad Preferences" page. There are also external ad controls such as ad blockers, the private browsing mode, and opt-out tools provided by the Digital Advertising Alliance [36]. However, these mechanisms are often challenging for users to adopt since they are plagued by poor discoverability [36] and confusing interfaces [35, 37, 56]. Users also only have a partial understanding of the advertising data collection and targeting processes [8, 24, 27], and often resort to imprecise mental models [134].

To help users make better sense of targeted advertising, prior work has proposed targeted mechanisms such as ad preference managers (allowing users to see specific interest profiles about them) [12], improving the transparency of ad controls by, e.g., designing icons that convey the control's presence while minimizing users' misconceptions [38], and making the entry point to ad controls easier to find [48]. While transparency can increase users' trust in the provided service and their perception of the benefits of data collection, it does not guarantee behavioral changes [30]. Indeed, unhelpful explanations may actually decrease users' trust in targeted advertising [129]. Most existing transparency mechanisms also fall short of informing users, as they have misleading interfaces [55] or provide vague and inaccurate information [8, 114, 122].

Nevertheless, prior work on user behaviors related to targeted advertising mostly focuses on the individual level [35, 36, 55, 56]. The concept of networked privacy suggests that one's individual privacy must be situated in the broader context of social and cultural norms [60, 63, 72]. As such, in our study, we recruited participants from diverse cultural backgrounds and included cultural dimensions in our investigation of user behaviors in the ad ecosystem.

2.3 Culture and Religion

Prior work has shed light on how a standardized approach of advertising across different countries and cultures is not effective as consumers use the same product differently and react differently to the same advertising messages [130]. Prior advertising literature has identified the role of culture and religion in shaping consumers' attitudes, behaviors, and decisions regarding advertising in general in different countries [17, 59, 80, 89, 126, 138]. These studies informed our choice of measuring culture and religion as possible explanations of cross-country variances in people's reactions to targeted advertising on social media.

Culture refers to shared meanings, ideas, and values across community members [54]. One of the most cited cross-cultural studies is Hofstede's work, which categorized culture at the country level across four dimensions: individualism-collectivism, power distance, uncertainty avoidance, and masculinity-femininity [45, 46]. Applying Hofstede's scale, prior research has found that people in countries with high scores of individualism and uncertainty avoidance have higher privacy concerns [57, 125]. Recent privacy research has attempted to measure culture at the individual level [113] to capture nuanced social dynamics and acknowledge cultural diversity within a country [34].

Related to culture, religion has also been explored in prior advertising and human-computer interaction (HCI) research. Prior advertising literature has shown religion's influences on consumers' perceptions of an ad's benefits and credibility as well as their purchase intentions [80, 85, 124, 126], although most of these studies were conducted before the Web 3.0 era regarding print advertising. For example, Wang et al. found that Muslims were most likely to be offended by controversial advertising and generally found the current regulations insufficient to accommodate their sensitivities, whereas Christians and Hindus found the regulations more aligned with their relatively liberal attitudes [126]. The growing body of Islamic HCI literature [75] shows how privacy in Islam is tied to modesty and family honor beyond self and influences Muslim women's online self-representation accordingly [1, 3]. Researchers also started to explore how faith, religion, and spirituality can be incorporated into the design of technologies such as well-being apps [95] and post-mortem data management [25] in a CHI 2022 workshop [78].

Most related to our study, prior privacy studies conducted in the South Asian context show how users' perceptions, practices, and privacy preferences are shaped by local social and cultural norms in these regions. For example, female users from Bangladesh exhibit different privacy considerations for self-disclosure on social media compared to the literature on Western-developed countries as they prioritize family reputations [77]. Women in many South Asian contexts face cultural expectations to share their devices and digital activities, resorting to practices such as content deletion and technology avoidance [82, 83]. Regarding targeted advertising, Sharma et al.'s interview study with participants from Bangladesh and India revealed particular concerns about fraudulent targeted ads and privacy violations due to device sharing [90].

Compared to prior work that similarly examines South Asian users' experiences with targeted ads on social media [51, 90], our study differs and extends in the following ways: (1) providing quantitative insights beyond qualitative exploratory findings; (2) recruiting participants from Pakistan (as a third South Asian country) and the US (where most existing work on user perceptions of targeted advertising comes from) for a more extensive cross-country comparison; (3) providing a more privacy-focused analysis rather than people's experiences with targeted ads in general; and (4) taking the interplay of country, culture, and religion into account through path analysis.

3 Methods

We conducted an online survey with 412 participants (Bangladesh: 103; India: 105; Pakistan; 103; US: 101) to examine people's perceptions and behaviors related to targeted ads on social media platforms (RQ1), how these experiences may differ by country (RQ2), and how the cross-country variances may be indirectly influenced by culture and religion (RQ3).

3.1 Survey Flow

Below we describe the general flow of our survey and key questions. For this paper, we focus on analyzing participants' responses related to their perceived benefits and concerns about targeted ads on social media platforms (*perceptions*) and their ad management strategies (*behaviors*). Appendix A includes the full questionnaire.

Consent and screening. We explained our study's purpose at the beginning of the survey. Those who consented were then asked three screening questions: (1) a commitment attention check question [26] – only participants committed to providing thoughtful answers to our survey questions could proceed; (2) a country-check question – only participants who selected the country for both origin and current residence could proceed; and (3) a screening question for social media usage – participants who selected "yes" for using any social media in the last six months could proceed. We did this screening to rule out variances from participants with multi-country, multi-cultural backgrounds in our cross-country analyses, and to ensure participants had enough experience on social media to formulate their responses. Participants who passed all three screening questions proceeded to take the rest of the survey.

Perceived benefits and concerns. Participants were asked to rate the benefits and concerns they associated with targeted ads. We drew from prior work [90] to develop answer options about benefits; examples include "ads help me get a discount" and "ads connect me with small businesses and support their growth." We drew from prior work [6, 74, 135] to develop answer options about concerns and put them into three clusters: ad quality, security and privacy, and ads targeting sensitive attributes of individuals. Participants were asked to select from a 5-point scale from "strongly disagree" to "strongly agree" for each answer option.

Ad management strategies. We presented examples (with screenshots) of various ad settings and management strategies users engage with, drawing from prior work [36, 90]. We asked participants whether they had previously engaged with the aforementioned settings or strategies; those who responded "yes" were asked to choose the specific behaviors and report corresponding frequencies, and those who selected "no" were asked to specify their reason(s) for not doing so. All participants were then asked to specify their confidence level for each provided behavior. We also asked participants to choose which feature(s) platforms could provide to help them better manage targeted ads, using examples from prior work [90].

Culture, religion, and demographics. For cultural dimensions, we adopted the same practice as in Anaraky et al. [34] by (1) using Triandis and Gelfand's scale [113] to measure culture at the individual level (i.e., horizontal individualism, vertical individualism, horizontal collectivism, and vertical collectivism) and (2) using Hofstede's scale for uncertainty avoidance at the individual level.

- In *vertical individualist* societies (e.g., the United States, Great Britain, and France), individuals focus on improving their status and standing out while exhibiting competitive zeal and a winning mindset [92].
- In *horizontal individualist* societies (e.g., Sweden and Denmark), people view themselves as equal to others in status, valuing one's uniqueness, autonomy, and self-reliance [91].
- In *vertical collectivist* societies (e.g., India and Japan), people focus on family unity, and respect group decisions even if doing this might sacrifice their personal goals [92].
- In *horizontal collectivist* societies (e.g., Israeli kibbutz), the focus is on sociability and interdependence with others as well as collective pride [92, 113].
- *Uncertainty avoidance* reflects the extent to which members of a society feel threatened by uncertain or unknown situations [45].

For religion, we asked participants to choose their current religion (if any, with a "prefer not to disclose" option). For demographics, we asked participants to specify their age, gender, ethnicity/race, employment status, education, tech background, income, and current living status, all with a "prefer not to disclose" option.

3.2 Survey Implementation

Pilot testing. We did two rounds of pilot testing to improve the design of our survey questionnaire. Round 1 included 20 participants (about five from each country) recruited via word of mouth, and we used the results to revise the survey flow and wording of specific questions. Round 2 included a larger sample of 113 participants (Bangladesh: 17; India: 7; Pakistan: 23; US: 66), also recruited via word of mouth and posts on social media. However, we experienced significant challenges in reaching participants as we received an exponential number of bots, duplicates, and spam responses, especially from individuals who claimed to come from the three South Asian countries but were residing in the US (e.g., reflected by the IP address).

Recruitment and data collection. Informed by the pilot testing recruitment challenges, we decided to partner with Qualtrics, a reputable panel provider also used in prior work [18, 87], for our recruitment. We targeted our survey to individuals 18 years or older, whose country of origin and current residence is one of the following: Bangladesh, India, Pakistan, and the United States. To ensure sample diversity, we also implemented age and gender quotas for each country in line with the respective census data [118]. We did two rounds of soft launches with Qualtrics to ensure that our pre-screening criteria and age/gender quotas could be reasonably met, with a maximum discrepancy rate of 2% across all countries.

The full data collection of our survey was conducted and completed in September 2023. In the US, the survey was administered in English. For India, Bangladesh, and Pakistan, we provided both English and translated versions of the survey in Hindi, Bengali, and Urdu, respectively, using back translation by researchers who are native speakers to ensure semantic consistency. Participants were compensated the amount they agreed upon with Qualtrics before entering the survey. Qualtrics did not disclose this amount to us. The median time taken to complete the survey was around 10 minutes.

Our power analysis suggested that to achieve a medium effect size (d=0.50), α=0.05, and high desired power (0.95) for path model analysis, we need 211 participants [67]. We recruited 412 participants across all countries (Bangladesh: 103; India: 105; Pakistan: 103; US: 101), surpassing the suggested sample size. Qualtrics also performed data cleaning and validation of the survey responses.

Ethics. Our study was approved by the Institutional Review Board (IRB) at [anonymized institution]. We introduced the study purpose at the beginning of the survey, including the rights of the data subject and that participation was voluntary. We ensured that any personally identifiable information was removed before conducting our analysis. We stored the collected data in a secure location as per our institution's data security policies.

3.3 Data Analysis

We calculated descriptive statistics (for RQ1) and inferential statistics at a significance level of $p<0.05$ (for RQ2 and RQ3).

For RQ2 about cross-country comparisons, we conducted confirmatory factor analysis (CFA) to assess the reliability and internal consistency of the scales we created for perceived benefits and concerns (ad quality, S&P, targeting of sensitive attributes). The constructs we used showed a reasonably high internal consistency, with all of them having Cronbach's alpha values exceeding the acceptable thresholds of 0.8 [19]. We removed items with a factor loading below 0.5, i.e., "other" for benefits, "finance-related ads" and "other" for concerns. The final CFA model showed a good fit (RMSEA = 0.08 with a 90% CI of [0.080, 0.095], CFI = 0.89, TLI = 0.88) [47]. We then conducted Kruskal-Wallis tests for cross-country comparisons using the aggregated scores of perceived benefits, concerns, and ad management behaviors as the dependent variables. Additionally, we performed chi-squared tests for cross-country comparisons of each individual ad management behavior to capture the nuances behind the aggregated score.

For RQ3, we similarly started with CFA for the five cultural dimensions since we borrowed measurement instruments from prior work [45, 113] but applied them in a different context. All five dimensions achieved high internal consistency of 0.8 and the CFA model showed a good fit ($RMSEA$=0.041 with a 90% CI of [0.031,

0.050], CFI=0.96, TLI=0.96). Furthermore, we constructed a path model to explore to what extent culture and religion mediate the relationship between one's country and their perceptions and behaviors related to targeted ads, using the R lavaan package [79]. Our path model simultaneously fits a series of regressions that also provide insights into the postulated causal connections between different variables. We further added residual correlations between the five variables for cultural dimensions and four variables for perceptions, given that these variables are conceptually related to each other and could have correlations beyond their shared modeled causal factors. The path model showed good fit ($\chi^2(3)$=131.76, p<.001, $RMSEA$=0.041, p<.001, CFI=0.94, TLI=0.92) [47].

4 Results

We first describe our sample and then present findings corresponding to each of our three research questions.

4.1 Participant Profile

Table 1 shows the breakdown of participant demographics by country. Among our 412 participants, there was an almost even representation for each of the four countries: 25.5% for India, 25.0% for Bangladesh, 25.0% for Pakistan, and 24.5% for the United States. The majority identified as male (55.6%), followed by female (43.7%); the remaining participants identified as non-binary or preferred not to disclose their gender. Participants were roughly evenly distributed across different age groups, with the highest representation in the 25-34 range (28.3%) and 18-24 range (21.5%). The majority of participants were fairly educated but also skewed toward low-income and middle-income households.

In terms of religious affiliation, Muslims, Hindus, and Christians were most represented in our sample, with most Muslims coming from Bangladesh and Pakistan, most Hindus coming from India, and most Christians coming from the US. The remaining participants identified as Jains, Sikhs, Buddhists, or stated they had no religion.

Figure 1 shows social media usage distribution by country. Participants predominantly used YouTube (96%) and Facebook (95%), followed by Instagram (77%), Twitter (66%), LinkedIn (44%), TikTok (42%), and SnapChat (40%).

4.2 RQ1: Perceptions and Behaviors

Here, we present descriptive statistics of the broad trends we observed about participants' perceived benefits, concerns, and behaviors related to targeted ads on social media regardless of their country.

Perceived benefits: no variances between different aspects. We asked participants about which benefits they perceived about targeted ads on social media, using a 5-point scale. Most participants agreed that targeted ads help them *explore and compare different brands* (M=3.83, SD=1.09), *support small businesses* (M=3.81, SD=1.24), and find content *relevant to their interests* (M=3.77, SD=1.17). As shown in Figure 2, the mean value for all items within the perceived benefits scale is between 3 ("neither agree nor disagree") and 4 ("somewhat agree"), suggesting that different benefits of targeted ads were perceived homogeneously and no particular types of benefits stood out.

Concerns: security and privacy more than ad quality. We measured participants' concerns related to targeted ads on social media along three dimensions: (1) the ad's quality, (2) security and privacy issues, and (3) ads targeting sensitive attributes of individuals. As shown in Figure 3, participants were most concerned about the security and privacy issues around ads, followed by ads targeting sensitive attributes (as a specific aspect of privacy concerns for targeted ads) and, lastly, the quality of ads.

For concerns related to *security and privacy issues*, all five items within this dimension consistently received a rating of 4 ("somewhat agree") or above. Fraudulent advertising received the highest rating (M=3.64, SD=1.25), followed by ads tracking activities through device access (M=3.56, SD=1.24) and advertisers selling user data to third parties (M=3.56, SD=1.27).

For concerns about *ads targeting sensitive attributes*, participants were most concerned about finance-related ads such as those on credit cards, loans, and mortgage financing (M=3.74, SD=1.09), closely followed by ads on sensitive topics such as weight loss and mental health (M=3.63, SD=1.15). There was also a fair amount of concern about ads targeting demographic attributes such as age, gender, and race/ethnicity (M=3.45, SD=1.27).

Within *ad quality*, participants were most concerned about clickbait ads (M=3.47, SD=1.25), i.e., ads designed to grab attention through sensationalist headlines or cheap gimmicks [135]. Participants also expressed concerns regarding assertive or manipulative ads that coerce them into making purchases (M=3.25, SD=1.26).

Ad management behaviors were mostly passive. Drawing from prior work [37, 90], we presented participants with a list of eight potential behaviors for managing targeted ads on social media and asked whether they had previously engaged with any one of them in Q21. Among all behaviors (regardless of the frequency), the following three received the most votes: *ignore and scroll past the ad* (47.9%), use the *"hide ad"* feature (41.6%), and *turn off notifications on comments/posts from an ad page* (36.1%). On the contrary, only 24.7% of participants had ever used *centralized pages for managing ad preferences and settings* and only 23.2% had ever *limited their social media apps' location access in their phone settings*. Moreover, 15.7% of all participants reported that they have never engaged with any of the eight behaviors or explored ad-related settings and controls. In terms of specific reasons, these participants mentioned not knowing how to access ad settings (35.8%) and feeling that these settings would not reduce repetitive ads (32.1%) rather than a lack of time (24.7%).

High adoption and confidence for behavior. For any behaviors that participants had engaged with, we asked participants to further report the frequency on a 5-point scale ranging from 1 – "never" to 5 – "always" (Q22). Figure 4 provides an overview. Most participants reported "sometimes" and "often" for adopting these behaviors.

For all participants, we also asked them to rate their confidence in engaging with any of these behaviors on a 5-point scale (Q24). The behaviors that participants felt most confident about were *ignoring ads* (M=3.45, SD=1.21), *hiding ads* (M=3.36, SD=1.28), and *speeding up video ads* (M=3.22, SD=1.29). The behaviors that participants felt not so confident about were *turning off phone location for social media apps* (M=3.12, SD=1.28) and *reporting ads* (M=3.11, SD=1.33). The confidence level across all behaviors converged between "3 –

	Country			
	IN (105)	BD (103)	PAK (103)	US (101)
Gender	%	%	%	%
Woman	46.67	41.75	45.63	40.59
Man	52.38	58.25	53.40	58.42
Non-binary	0.00	0.00	0.00	0.00
Prefer not to disclose	0.95	0.00	0.97	0.99
Age	%	%	%	%
18-24	24.76	30.10	26.21	4.95
25-34	29.52	34.95	36.89	11.88
35-44	26.67	14.56	15.53	22.77
45-54	3.81	10.68	8.74	11.88
55-64	0.95	3.88	7.77	31.68
65-74	13.33	5.83	3.88	12.87
75+	0.95	0.00	0.97	3.96
Education	%	%	%	%
Less than a high school	0.95	3.88	0.00	2.97
High school or equivalent	6.67	13.59	4.85	27.72
Associate Degree	7.62	14.56	10.68	32.67
Bachelor Degree	28.57	33.98	38.83	25.74
Graduate or currently enrolled	8.57	2.91	3.88	0.99
Masters or professional degree	47.62	31.07	34.95	9.90
Doctorate degree	0.00	0.00	6.80	0.00
Income	%	%	%	%
Low	31.43	57.28	33.98	43.56
Middle	47.62	27.18	39.81	35.64
High	20.95	15.53	26.21	20.79
Religion	%	%	%	%
Hindu	72.38	9.71	0.00	5.94
Muslim	11.43	83.50	93.20	4.95
Christian	8.57	2.91	2.91	59.41
Jain	0.00	0.97	0.97	0.00
Sikh	3.81	0.97	0.00	0.00
Buddhist	1.90	1.94	0.00	0.99
No Religion	0.00	0.00	0.00	19.80
Prefer not to disclose	1.90	0.00	0.97	5.94
Others (Please describe)	0.00	0.00	1.94	8.91

Table 1: Participant demographics (n=412)

moderately confident" and "4 – very confident" with no significant differences between behaviors.

Desired features for better ad management. Drawing from prior work [90], we asked participants which features they would prefer for tools that help them better manage targeted ads on social media. Most participants desired the ability to filter ads based on preferences (62.1%) and a blue tick mark indicating the ad was verified by the platform (59.2%). By comparison, the following features were voted by less than half of our participants: 46.6% wanted ads to be shown at specific times they choose, 42.2% wanted ads to be shown in a separate window within the app, and 41.3% preferred to see ads ranked by metrics such as positive review counts.

4.3 RQ2: Cross-Country Comparisons

Going beyond the descriptive statistics of broader trends about perceptions and behaviors, we also wanted to understand to what extent they differ across the four countries. In this section, we report findings on cross-country comparisons for perceived benefits, concerns, and adoption of ad management behaviors overall (Kruskal-Wallis tests) as well as specific behaviors (chi-squared tests). We applied Holm-Bonferroni corrections for all post-hoc pairwise comparisons to control for Type I errors.

US participants found targeted ads on social media less beneficial. We found that participants' perceived benefits differed significantly across the four countries ($H(3)$=24.54, p<.001). Post hoc pairwise comparisons indicated that the benefit scores for US participants were significantly lower than those for Indian (p<.001), Bangladeshi (p=.01), and Pakistani (p<.001) participants. We did not observe

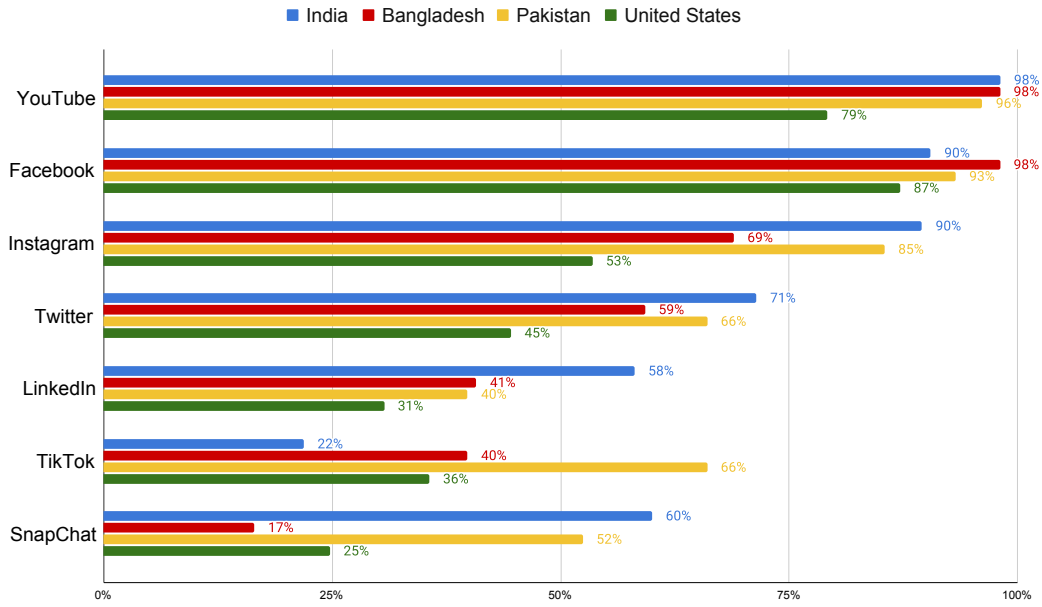

Figure 1: Social media usage distribution by country, in response to Q5.

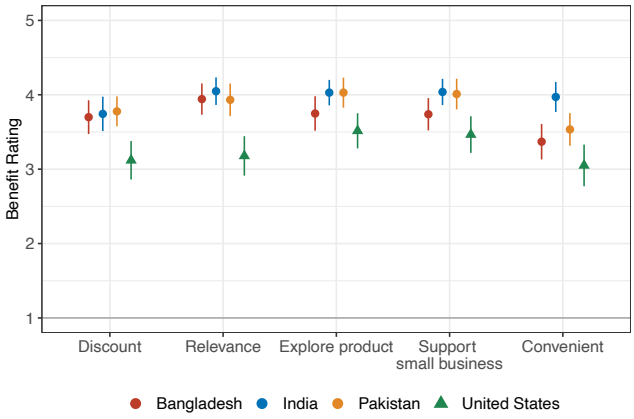

Figure 2: Participants' perceived benefits about targeted ads on social media platforms across four countries, in response to Q15 (ranging from 1 – "strongly disagree" to 5 – "strongly agree").

significant differences in benefit perceptions among the three South Asian countries.

US participants were more concerned about security and privacy issues. Among the three types of concern regarding targeted ads on social media, we observed significant cross-country differences for concerns related to *security and privacy issues* only ($H(3)$=12.51, p=.005). Post hoc pairwise comparisons revealed that US participants were significantly more concerned about S&P issues than those in India (p=.02), Bangladesh (p=.02), and Pakistan (p=.002). No significant differences in S&P concerns were observed for the three South Asian countries.

Indian participants less likely to hide ads and turn off notifications. Our results showed no significant cross-country differences in participants' overall adoption of ad management behaviors based on the aggregated score. However, when looking into each individual behavior using chi-squared tests, we found significant cross-country differences for the following three: *hide ads*, *unfollow ad pages*, and *turn off notifications for ad-related comments/posts*.

Specifically, participants' adoption of the *"hide ads"* behavior differed significantly across the four countries ($\chi^2(3)$=10.89, p=.01). Indian participants are significantly less likely to hide ads compared to participants in the US, Bangladesh, and Pakistan (p=.0147). A similar pattern was found for *turning off ad-related comments/posts*: there were significant cross-country differences ($\chi^2(3)$=13.31, p=.004), and Indian participants were significantly less likely to do this than participants in the US, Bangladesh, and Pakistan (p=.037). We also found significant cross-country differences for the behavior *"unfollow ad pages"* ($\chi^2(3)$=8.67, p=.03). However, we did not find any significant pairwise differences due to the Holm-Bonferroni corrections.

4.4 RQ3: Effect of Culture and Religion

Now that we observed cross-country variances for perceived benefits and some of the concerns and ad management behaviors, we were curious to find out to what extent these cross-country variances could be influenced by cultural dimensions and religion as the underlying factors. To this end, we performed mediation analysis

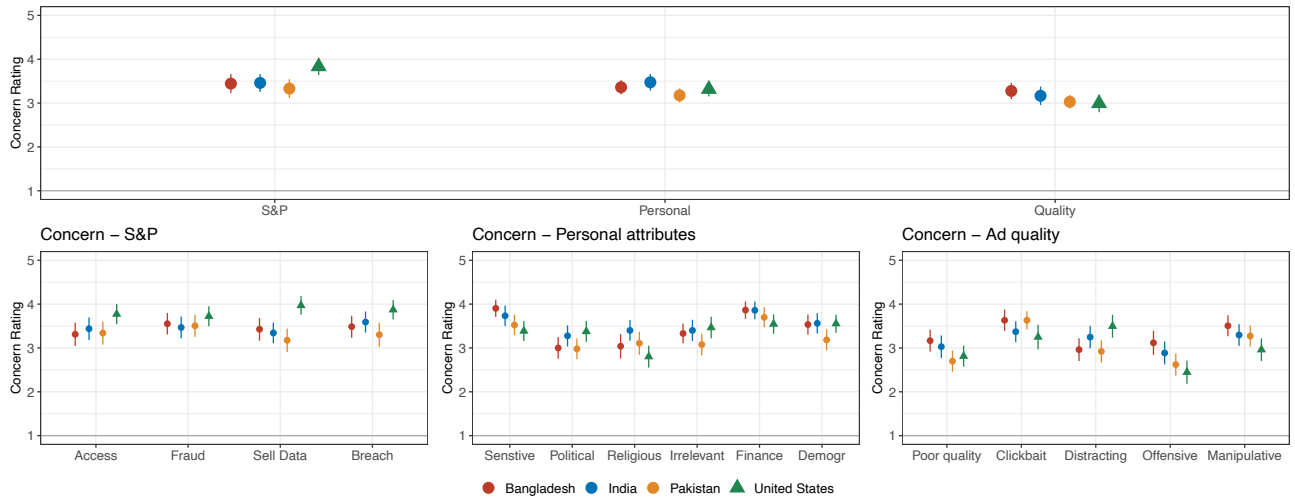

Figure 3: Participants' perceived concerns about targeted ads on social media platforms across four countries, in response to Q16 (ranging from 1 – "strongly disagree" to 5 – "strongly agree").

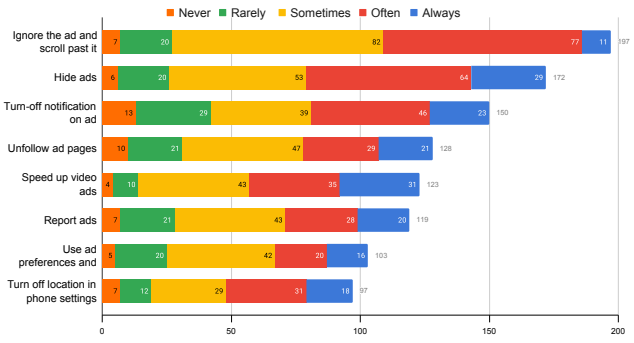

Figure 4: Reported frequency of engaging with various ad management behaviors, in response to Q22 (ranging from 1 – "never" to 5 – "always").

in a path model.[2] We summarize the key insights as a simplified diagram in Figure 5 and include the full results in the expanded diagram in Figure 13 and in Table 3, Appendix B. We only report findings that are statistically significant at $p<.05$.

Cultural dimensions partially influence cross-country differences in perceptions. Overall, our path analysis results confirmed the cross-country variances in participants' concerns about ads targeting sensitive attributes ($\chi^2(3)=7.90$, $p=.048$), and security and privacy issues of targeted ads ($\chi^2(3)=15.17$, $p<.001$), as demonstrated by path #1. This is partly because participants in the four countries differed significantly for some of the cultural dimensions (path #2). These cultural dimensions, in turn, influenced participants' perceived benefits and concerns (path: #4).

Specifically, participants in the four countries differed significantly in their affiliation with vertical collectivism ($\chi^2(3)=23.74$, $p<.001$) and vertical individualism ($\chi^2(3)=74.11$, $p<.001$). US participants scored significantly lower than South Asian participants for these two dimensions ($p<.001$ for all pairwise comparisons).

The three cultural dimensions that positively influenced participants' perceived benefits of targeted ads were vertical collectivism ($\beta=0.267$, $p<.001$), vertical individualism ($\beta=0.135$, $p=.008$), and horizontal collectivism ($\beta=0.223$, $p=.001$). In other words, participants who valued family unity and group decisions (vertical collectivism), valued teamwork and collective pride (horizontal collectivism), and focused on improving individual status (vertical individualism) perceived targeted ads on social media to be more beneficial.

In terms of concerns, two cultural dimensions positively influenced concerns about ads targeting sensitive attributes: vertical individualism ($\beta=0.137$, $p=.003$) and horizontal collectivism ($\beta=0.134$, $p=.012$). This means that participants who valued improving their own status and interdependence with others – two very different mindsets – both had higher concerns about ads targeting their sensitive attributes. Additionally, horizontal individualism was positively associated with concerns about security and privacy issues of targeted ads ($\beta=0.149$, $p=.016$).

Religion partially influence cross-country differences in perceptions. Religion is another underlying factor of the cross-country variances in participants' perceptions of targeted ads on social media. Our chi-squared test[3] results showed significant cross-country differences for religion ($\chi^2(12)=555$, $p<.001$), as demonstrated by path #3: participants from India were mostly Hindu, participants from Pakistan and Bangladesh were mostly Muslims, and participants from the US were mostly Christians or atheists. Religion, in turn,

[2]Since prior work shows age-based differences in privacy concerns and decision-making [32, 120], we also included age in a separate model as a robustness check. We found that age indeed explains some of the observed differences, but the mediating role of culture and religion still holds even when accounting for age (see details in Appendix C).

[3]We conducted the chi-squared test outside the path model to simplify the analysis. As such, path #3 in Figure 5 is a dotted arrow.

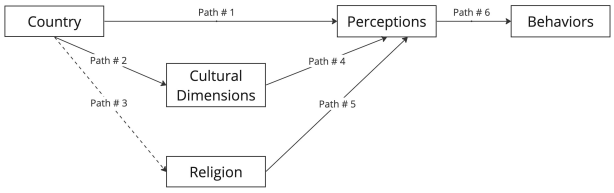

Figure 5: Simplified path model on how culture and religion mediate the cross-country variances of people's perceptions of targeted ads on social media.

has an indirect effect on cross-country variances in participants' perceived benefits ($\chi^2(4)$=13.06, p=.010), as shown by path #6.

Compared to Muslims, two groups found targeted ads on social media significantly less beneficial: Christians (β=−0.421, p=.023) and participants from minority religions, namely Jainism, Buddhism, and Sikhism (β=−0.421, p=.023).

Concerns about ads targeting sensitive attributes drove ad management behaviors. In addition to the role of cultural dimensions, religion, in influencing cross-country variances in perceptions, our path analysis results further provided insights into the relationship between perceptions and ad management behaviors (path #6). Among perceived benefits and three types of concerns, concerns about ads targeting sensitive attributes were the only factor positively associated with the adoption of ad management behaviors (β=0.394, p=.001). The other three factors remained non-significant.

5 Discussion

With targeted ads on social media as the focus of our study, our findings provide insights into (1) users' perceived benefits, concerns, and ad management behaviors; (2) how these variables differ across four countries, including Bangladesh, India, and Pakistan in the understudied South Asian region and the US as a well-studied Western country; and (3) how the cross-country variances could be further attributed to one's cultural values and religious affiliations. In this section, we discuss our study's limitations, revisit our key insights in relation to prior work, reflect on how our findings add to cross-cultural privacy research, and provide practical recommendations.

5.1 Limitations

Our study has a few limitations. As is the case for every survey, there might be self-selection bias, as our survey might have attracted those with more interest in the topic of social media. We framed the study's purpose as understanding users' perceptions of targeted ads and adoption of ad management practices. While we did our best to obtain a diverse and balanced sample, with census-represented quotas for age and gender, our sample was somewhat skewed toward younger users for the three South Asian countries and older users for the United States. However, this distribution reflects the demographics of social media users in these regions [86, 88]. Our participants were also more educated compared to the general population in these countries. Lastly, going beyond cross-country variances, our study has shed light on how participants belonging to different cultural dimensions and religions reacted to targeted ads on social media differently. Since the strength of a survey is to provide quantitative rather than qualitative insights, we can only speculate the "why" aspect behind cross-cultural and cross-religion differences (as we do in Section 5.3). We recommend future research to provide more robust empirical evaluations of our speculations.

5.2 Key Insights Compared to Prior Work

We discuss our key findings in relation to our research questions as well as closely related prior work and also summarize it in Table 2.

Perceived benefits converge, concerns diverge. Prior work has identified users' perceived benefits [61, 62] and concerns [27, 115, 116, 131] about targeted advertising in individual studies, mostly from Western samples only. We situated the inquiry about targeted advertising in the social media context specifically, aggregating all perceived benefits and concerns in one survey to also contribute novel knowledge of their relative prevalence. We found that benefits identified by prior work, such as relevant content [5, 116, 137] and outreach to smaller businesses [90], still hold in our study. Yet, user perceptions start to diverge for the different types of concerns, with more concerns gravitating toward security and privacy issues and ads targeting sensitive attributes more than ad quality. Our findings highlight the multi-dimensional nature of user concerns about targeted advertising: while things like problematic content [135] and disruptions to user experience [136] might be the first thing users notice when interacting with an ad, when asked, users actually understand and care more about deeper issues such as scams [81], invasion of privacy [116], and discriminatory advertising [10, 49, 123].

Adopted ad management behaviors are mostly passive. Prior work has identified adoption and usability issues of specific ad-related settings and controls such as the DAA opt-out tool [56, 116] and controls on Facebook [36, 48]. We expanded the investigation to include controls for various ad formats (e.g., speed up the video for a video ad) as well as more passive behaviors (e.g., simply ignore and scroll past the ad). When comparing different behaviors, our participants tended to adopt those that are low-effort and passive (mostly ignoring the ad and using the "hide ad" feature) but do not fundamentally change the ads they see or the amount of data tracked by the platform. Conversely, centralized places for ad management, such as "Ad Preferences" for Facebook, had much lower adoption rates. These findings are not surprising given that users have limited time [44] and bounded rationality in recognizing privacy harms [2], while the "notice and choice" paradigm has put unrealistic expectations and burdens on users' self-management of their privacy [20]. Contrary to prior work showing the advantages of transparency and privacy dashboards in addressing user concerns and building trust [30, 43], our findings prompt a much-needed reflection on their promises. Situating our findings in different personas about ad experiences [36], most of our participants were actually in "the advertising disengaged" category; advanced ad controls and comprehensive transparency mechanisms did not suit their needs when they already felt resigned and tended to ignore the ad.

Different patterns between participants in the US vs. South Asia. Researchers have recognized the "WEIRDness" of usable privacy

Topic	Related Research	Countries	Our Findings
Perceived ad benefits and concerns	Targeted ads are beneficial to explore relevant content [5, 115, 136] and help reach small businesses [90].	United States [5, 115, 136], India, Bangladesh [90]	We **aggregated various ad benefits and concerns** in one survey to compare their relative prevalence. Participants found targeted ads most beneficial for exploring relevant products and supporting small businesses.
	Ad concerns include S&P issues [80, 115], ad quality [134], disruption to user experience [135], and targeting sensitive attributes [10, 49, 122].	Israel, Germany [80], United States [10, 49, 115, 134, 135]	Most users were concerned about S&P issues and ads targeting sensitive attributes than about ad quality.
Ad management behavior	Prior work suggests that transparency and privacy dashboards address user concerns and build trust [30, 43].	United States [30, 43]	We compared various ad management behaviors and found that **most participants preferred low-effort behaviors** (e.g., hiding ads), over visiting centralized ad management places (e.g., the 'Ad Preference page' for Facebook).
Difference in user patterns in the US vs. South Asia	Prior work in South Asia primarily explored people's perceptions **qualitatively** [68, 90, 121].	India, Bangladesh [90], Pakistan [68]	We extend prior work **quantitatively**, confirming that users' tendencies to ignore/skip ads and concerns about fraudulent ads, observed in Bangladesh and India [90], also apply to participants from Pakistan and US.
	US participants are more privacy concerned but less interested in restricting their social media visibility, compared to those in India and China [125]	United States, India, China [125]	Our findings confirm the trend that users in India, Bangladesh, and Pakistan are less concerned about the privacy risks of targeted ads than those in the US. However, this lower concern also leads to reduced adoption of ad management behaviors, as observed in India.
	Significant differences in participants' ad preferences, perceptions, and coping behaviors correlate with their country of origin, culture, religion, and other demographic factors [51]	United States, India, Bangladesh, and Pakistan [51]	Our findings confirm cross-country differences. However, instead of using regressions, we built a comprehensive path analysis model that offers deeper insights into cross-country differences, highlighting the mediating role of culture and religion.
Nuances in measuring culture	Prior work in cross-country security and privacy research [42, 87, 117, 125] uses **country-level cultural dimensions**, based on Hofstede's work [45, 46], which groups all Asian countries as collectivist, and Western countries as individualist.	Russia, South Korea, France, Japan, UAE [87], Germany, Israel, Italy, Mexico, Poland, Saudi Arabia, South Africa, Sweden, UK [42], India [42, 125], China [42, 87], United States [42, 87, 116, 125]	Our work emphasizes the importance of using **individual cultural dimensions** for measuring privacy perception instead of country-level cultural dimensions, because privacy is highly individualized concept [33]. We found that people from South Asian countries can exhibit both (vertical) collectivism and (vertical) individualism.
	Individualism is one of the predictors of positive attitudes towards online advertisements [119].	Canada, England, Turkey, India, Australia, Malaysia, Mexico, South Korea, Italy, Germany, China [119]	Our results suggest a partial positive association between individualism and perceived benefits of targeted ads. Specifically vertical individualism is positively associated with perceived benefits. However, horizontal individualism does not predict perceived benefits but is linked to higher S&P concerns.
Role of religion	Muslims are more easily offended by controversial advertising [126].	Malaysia [126]	Muslim participants in our study were fairly positive about targeted ads on social media. To the best of our knowledge, our study is one of the very first to systematically study religion in the context of target ads perceptions.

Table 2: Our findings in comparison with prior work.

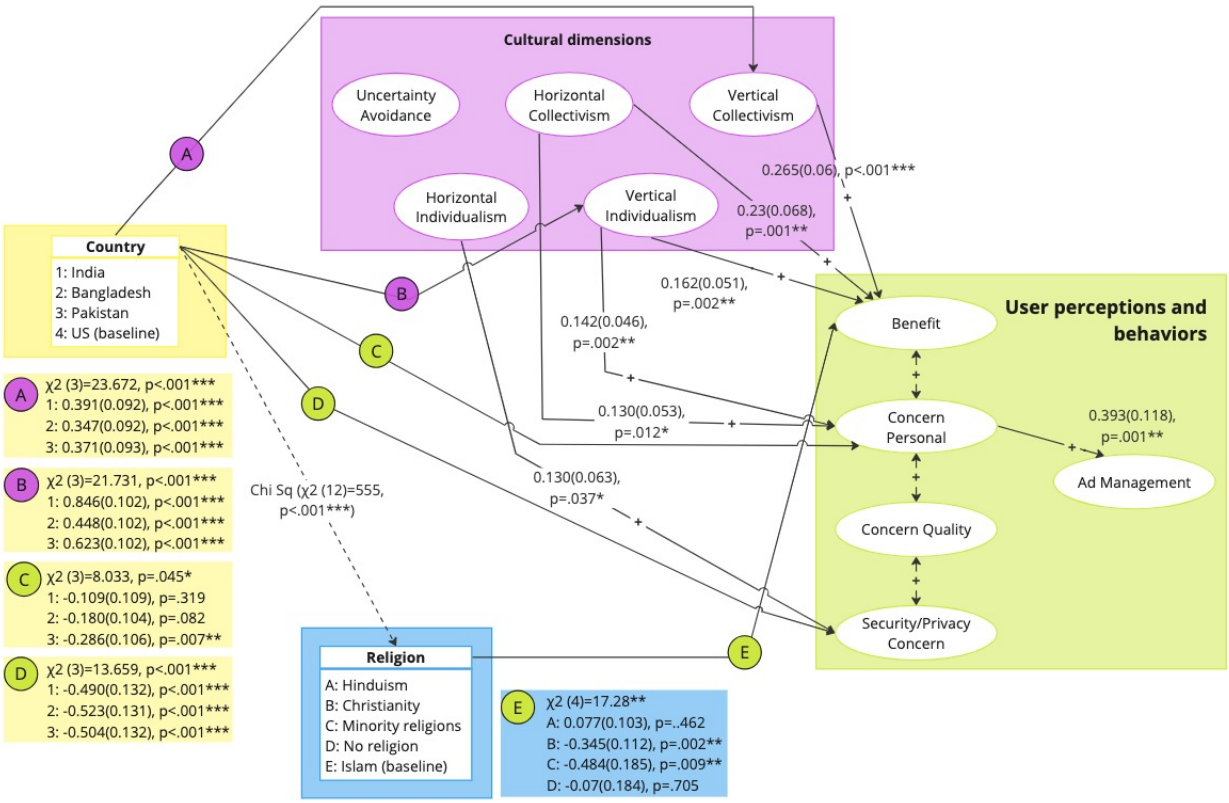

Figure 6: Detailed path model showing the mediating effects of culture and religion on cross-country variances.

and security research [41], and there has been a growing body of cross-country studies [34, 39, 42, 52, 87, 125]. However, prior usable security research in the South Asia region, particularly in Bangladesh and Pakistan, remains primarily qualitative [68, 121]. Our work fills this gap by quantitatively comparing user privacy perceptions and behaviors between Bangladesh, India, Pakistan, and the US. Compared to Sharma et al.'s qualitative study with Indian and Bangladeshi users [90], we confirmed that their findings about users' tendency to ignore/skip ads and concerns about fraudulent ads also hold when including participants from Pakistan and the US. Moreover, compared to Wang et al.'s survey [125], conducted in 2011, and also comparing the US vs. Indian participants in the social media contexts, our findings share interesting similarities and differences. Wang et al. found that their US participants were the most privacy concerned, but they were also least interested in restricting the visibility of their social media information. Our findings confirmed the trend that participants in India (and by extension, Bangladesh and Pakistan) were less concerned, but the lower concern also influenced the adoption of fewer ad management behaviors, as Indian participants exhibited significantly lower adoption rates for two out of the eight behaviors we queried. Most recently, Kaushik et al. [51] surveyed users in the US, India, Bangladesh, and Pakistan, finding significant differences in participants' ad preferences, perceptions, and coping behaviors, which correlate with their country of origin, culture, religion, and other demographic factors. Using the same dataset, we extend this work by conducting a more structured path analysis, which shows the mediating role of culture and religion — how these two variables indirectly influence the cross-country differences in people's privacy perceptions related to targeted ads and the associated ad management behaviors.

5.3 Reflections on Cross-Cultural Privacy Research

Prior cross-country studies in usable privacy and security research often use individuals' country of origin as a proxy for culture [42, 87, 117, 125]. We went a step further to directly measure cultural dimensions at both country and individual levels while examining the interplay between country and culture in our mediation analysis. We also included religion in our mediation analysis, as religion and culture always exist in a close relation [13]. Our findings validate that culture and religion are indeed important underlying factors of cross-country variances; we also identify several directions for future cross-cultural privacy research out of this observation, as we discuss below.

The mediating role of culture and religion. A key insight from our findings is the mediating role of culture and religion underneath

cross-country variances; in other words, while participants across the four countries seem to have varying perceived benefits and concerns about targeted ads, this effect is somewhat influenced by their own cultural dimensions and religion. For instance, South Asian participants found targeted ads more beneficial than their US counterparts. A possible explanation suggested by our finding is that South Asian participants scored higher for both vertical individualism (driven to improve one's social status) and vertical collectivism (value for family unity and group decisions); these two cultural dimensions, in turn, were positively associated with one's perceived benefits of targeted ads. In terms of religion, both existing work [15, 16, 65] and our sample revealed the drastically different religious landscape in the four countries; when taking participants' religious affiliation into account, we then found that Muslims perceived more benefits from targeted ads than Christians and minority religions in our sample.

Interpretations of findings related to culture and religion. A natural follow-up question of our findings related to culture and religion is "why" – why would individuals with different cultural and religious backgrounds perceive targeted ads on social media differently? To this, our survey does not provide a direct answer due to its quantitative nature, but we can turn to prior marketing and psychology literature on culture and religion for possible interpretations.

For instance, religion is closely tied to spirituality (i.e., a personal quest for meaning in life, which can be religious or non-religious) [9]; evoking spirituality in advertising has been found to enhance consumers' eudaimonic (i.e., realizing human potential and living a meaningful life) and hedonic (i.e., pleasure) well-being [23], which might, in turn, make religious consumers perceive more benefits about the ad. On our finding that horizontal individualism was positively associated with S&P concerns of targeted ads, a big part of horizontal individualism is the conception of an autonomous individual [91]. Related to this, data privacy has been conceptualized as one's control over their personal information, particularly in information systems research [7]. While this conceptualization has limitations [64], it does reasonably explain how individuals' value of autonomy could translate to expectations of greater control over personal information in the online context, which runs contrary to the privacy-invasive nature of targeted advertising and triggers concerns consequently.

Moreover, our findings add more nuances to some prior work on culture and religion in advertising, calling future work for further investigations. For instance, Wang et al. found that Muslims were most easily offended by controversial advertising [126]; by comparison, our Muslim participants were fairly positive about targeted ads on social media, even though many of these ads are fraught with stereotypes and discrimination [80, 84]. In other work, Valaei et al. identified individualism as one of the predictors of positive attitudes toward online advertisements [119] (not specific to targeted advertising or social media). Our findings confirm this partially as we observed a positive association between vertical individualism and perceived benefits. However, horizontal individualism was not a predictor of perceived benefits in our path model, and it instead predicted higher S&P concerns. This finding suggests the importance of differentiating vertical/hierarchy vs. horizontal/equality in examining cultural dimensions.

Nuances in measuring culture. Hofstede's work [45, 46] that measures culture at the country level (e.g., US as an individualist country and China as a collectivist country) is one of the most cited in cross-cultural studies [53]. Nevertheless, Hofstede's work was based on a database comprised of IBM employee responses, administered between 1967 and 1973, meaning that its suitability in current times and evolving digital contexts cannot be assumed. In fact, recent work such as Anarky et al. argued that cultural dimensions are better measured at the individual level in privacy research when privacy is highly individual-dependent [34]. Using the same set of measurement instruments as in Anarky et al. [34] – a combination of country-level and individual-level instruments – our findings indeed suggest that culture is fluid [50], individual-dependent, and researchers need to act with caution when applying cultural labels to a country as a whole.

Specifically, Hofstede's work attributes collectivistic cultures to Asian countries and individualistic cultures to Western countries [45], whereas our South Asian participants showed high affiliation toward vertical collectivism (maintaining family unity and group decisions) but also vertical individualism (a desire for improving social status). The high vertical individualism could be an artifact of our South Asian participants being more educated than the average population; however, it could also reflect that country-level measurements are not effective at capturing individual variances, and we need to use more granular, individual-level measurements when studying the effect of culture on privacy-related constructs.

Additionally, culture and religion are deeply intertwined with one's own socioeconomic condition [128] as well as the social norms [66] around them, and all of these factors can influence the information technology and communication use [28, 108]. For example, prior work has identified religion's indirect effect on one's use of social media by affecting their technology acceptance behavior and privacy concerns [11]. In comparison to the US, internet penetration [104], social media use [105], and interaction with digital advertisement [99, 101] are all recent yet rapidly emerging phenomena in South Asia. The spending power of people in South Asian countries has increased in recent years [103], but a substantial digital divide still exists [83]. We urge future research to include culture and religion – but also go beyond culture and religion – when studying targeted advertising and privacy issues with emerging technologies broadly.

5.4 Implications

Going beyond our study's empirical contributions, we offer suggestions for social media platforms, designers, educators, and regulators to improve ad-related user experience and mitigate potential harms from targeted advertising.

Transparency and privacy dashboards might not serve user needs. As we asked participants about their desired features for managing targeted ads, the most preferred was the ability to filter irrelevant or repetitive ads. This feature has been implemented by major platforms, although not fully (e.g., the topics one can filter on Facebook and Instagram are limited to alcohol, parenting, pets, social issues/elections/politics). Moreover, only 25% of all participants had explored centralized places for managing ad settings, such as Facebook's Ads Preferences page. While these mechanisms have

the advantage of condensing all ad-related controls in one place, our findings highlight that they face adoption issues as our participants would rather engage with passive actions for individual ads they encountered.

User needs for transparency mechanisms vary. Given that transparency and privacy dashboards likely work well only for "the advertising curators" (e.g., those who are willing to use ad controls and had used controls in the past) [36], we suggest that social media platforms could provide ad controls after identifying users' transparency needs, which could further be influenced by their cultural backgrounds. Right now, platforms' provisioning of ad controls can differ across regions, but it is mostly due to regulatory compliance (e.g., Facebook shows ads differently for users in the European Union due to the GDPR) [29]. Directly informed by our findings, we could see the potential of social media platforms to prioritize showing more comprehensive controls and explanations for US users and showing simpler, low-effort controls for South Asian users due to their varying privacy concerns regarding targeted ads. However, this approach needs to be rigorously empirically tested before implementation; from our earlier discussions, it is also possible that platforms could target the provisioning of controls more accurately when they can infer the user's cultural values rather than using their country as a proxy.

Educational needs for South Asian users. A key takeaway from our findings about South Asian participants is that they found targeted ads more beneficial and adopted fewer protective behaviors. This pattern could put them at a higher risk of harm resulting from targeted advertising, from data leakage to material harm in the extreme, such as scams. One possible explanation for the lack of concern is lower digital literacy [69, 127] in these emerging markets for digital advertising, and lower digital literacy could further introduce barriers to adopting privacy-protective behaviors [73].

Taking these findings into account, we suggest that social media platforms should take the responsibility of educating South Asian users as they expand into these markets. Rather than delegating education to centralized places for ad controls that are hard to find [36], platforms could explore alternatives informed by recent work such as educational videos [96] and explanations based on users' own data [129]. There are also opportunities to embed digital literacy initiatives in regulatory efforts. For instance, under the recently passed Digital Personal Data Protection (DPDP) Act [71] in India, regulatory authorities such as the Data Protection Authority (DPA) could partner with existing government digital literacy initiatives such as the National Digital Literacy Mission (NDLM) [70] to not only impart IT training but also share best practices for safer online experiences.

Regulatory needs for combating fraudulent advertising. Prior work has identified fraudulent ads as a prominent concern for Indian and Bangladeshi users [90], and our findings validate this concern for participants across the four countries. The economic impact of fraudulent ads is also real: online advertisement fraud is estimated to increase up to $172 billion globally by 2028 [100], and social media fraud-related losses were reported to be more than $1.2 billion in the US in 2022. While US regulators have been urging social media platforms to take strong measures against fraudulent advertising [111], Section 230 of the 1996 Communications Decency Act gives platforms broad immunity for materials posted by third parties, including advertisers.

In South Asia, ad fraud is also increasing at an alarming rate [93, 102], and the regulatory landscape is evolving but still lagging. In India, the Consumer Protection Act in 2019 [22] protects consumers from misleading advertisements and unfair trade practices, but experts are urging independent audit authority [31] or oversight by a governing body such as Data Protection Authority (DPA) to better hold social media platforms accountable. In Bangladesh, the recent Telecommunication Act in 2024 [40] applies broadly to data centers and cloud computing services, including social media platforms; social media platforms will be required to appoint compliance officers to handle regulatory and user complaints, but this requirement is yet to be enforced. Pakistan's Prevention of Electronic Crimes Act in 2016 [94] is responsible for curbing online illegal activities, including fraudulent advertising. However, experts point out that the law might be violating some aspects of the right to privacy in the name of national security. Other challenges, such as lower digital literacy and a lack of secure online transactions [127], further complicate the limitations of these regulations.

6 Conclusion

We conducted an online survey with 412 participants from the US and three South Asian countries: India, Bangladesh, and Pakistan. Our study provides insights into people's perceptions and behaviors about targeted ads (RQ1), how these experiences differ across the four countries (RQ2), and to what extent culture and religion explain the cross-country variances (RQ3). Our participants had similar perceptions of benefits but diverging concerns, with concerns about security and privacy issues being the most prominent. Participants resorted to mostly passive behaviors (such as ignoring or hiding an ad) for managing targeted ads. Compared to US participants, those in South Asia found targeted ads more beneficial and were less concerned about them. Several cultural dimensions and religion influence these cross-country variances. We recommend that future research should take cultural dimensions and religion into account to obtain deeper insights beyond using country as a proxy for culture. We also outline our findings' implications, such as provisioning ad controls based on users' transparency needs and more education about targeted advertising's risks and harms aimed at South Asian users.

7 Acknowledgments

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A Appendix: Survey Questionnaire

A.1 Residency Screener Questions

(1) We care about the quality of our survey data. For us to get the most accurate measures of your opinions, it is important that you provide thoughtful answers to each question in this survey. Do you commit to providing thoughtful answers to the questions in this survey? ○ I can't promise either way ○ Yes, I will ○ No, I will not
(2) What is your country of origin? ○ Bangladesh ○ India ○ Pakistan ○ United States of America ○ Other
(3) Which country do you currently live in? ○ Bangladesh ○ India ○ Pakistan ○ United States of America ○ Other

(*Participants need to answer "Yes, I will" for Q1, and select the same country for both Q2 and Q3 to proceed to the next page. If the answer is "No" or the answers for Q2 and Q3 do not match, show an error message, "Thank you for taking the time to answer a few questions. Unfortunately, you do not qualify for this particular survey, but we do hope to hear from you in the future."*)

A.2 Social media use

(4) Have you used any social media (e.g., Facebook, Instagram, Twitter, and YouTube) in the last six months?○ Yes ○ No

(*Participants need to answer "Yes" for Q4 to proceed to the next page. If the answer is "No", show an error message, "Thank you for taking the time to answer a few questions. Unfortunately, you do not qualify for this particular survey, but we do hope to hear from you in the future."*)

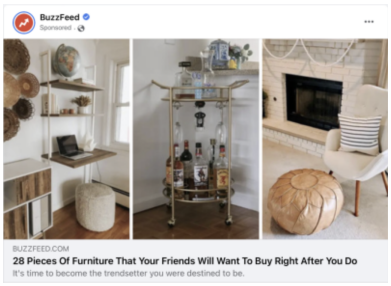
(5) Which social media platform do you use? (Select all that apply) ○ Facebook ○ Instagram ○ YouTube ○ LinkedIn ○ Twitter ○ TikTok ○ Snapchat ○ Other (Please specify)
(6) How often do you use the following social media platforms? *(Statements carry forward from the previous question) (1: A few times per month or less; 2: Once per week; 3: Several times per week; 4: Once per day; 5: Several times per day;)* ○ Facebook ○ Instagram ○ YouTube ○ LinkedIn ○ Twitter ○ TikTok ○ Snapchat ○ Other (Please specify)

A.3 Ad formats

(7) Ad types Advertisers can use various ways to promote their products on social media platforms. Below we provide definitions and examples of some common types of ads on social media platforms:

A. Influencer-based ads refer to posts or short videos influencers share on social media platforms endorsing a product or service. Who is an influencer? An influencer could be a celebrity or someone who has built a reputation for their knowledge and expertise on a specific topic. See the example of a chef promoting Shopify [4].

B. Soft Targeted Ads refer to articles from digital media companies such as 'Buzzfeed,' 'Quint' etc., with product links to other shopping sites, such as Amazon. For example, a user could encounter a Buzzfeed article about '28 Pieces of Furniture to buy' on their social media platform.

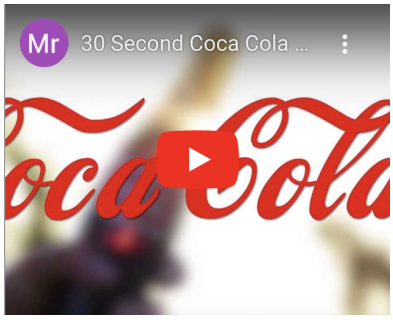


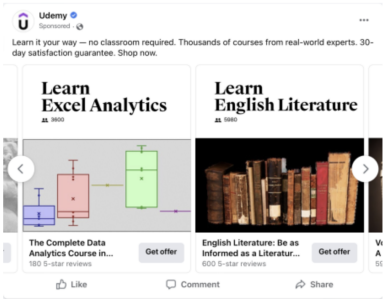
C. Video Ads refer to ads from companies shown in the form of a short video on a social media platform. For example, short video ads are shown on YouTube before the actual video begins.[5]

D. Text/Image Ads refer to ads from companies shown as text or images on a social media platform. For example, ads for printers from Amazon on a social media platform.

(8) Which types of targeted ads do you see often on social media platforms? ○ Influencer-based ads ○ Soft Targeted ads ○ Video ads ○ Text/Image ads ○ Others (Please describe)
(9) How frequently do you see the following ad formats? *(Statements carry forward from the previous question) (1: A few times per month or less; 2: Once per week; 3: Several times per week; 4: Once per day; 5: Several times per day;)* ○ Soft

[4] Example of influencer ad: https://www.youtube.com/watch?v=HuJnGyKXLeE&t=6s
[5] Example of video ad: https://www.youtube.com/watch?v=s0brZ8Cinao&t=1s





Targeted ads ○ Video ads ○ Text/Image ads ○ Others (Please describe)

(10) How much do you prefer each type of ad format? Definitions of various ad types are provided below for reference. *(1: I strongly dislike this ad format; 2: I somewhat dislike this ad format; 3: I am neutral about this ad format; 4: I somewhat like this ad format; 5: I strongly like this ad format;)* ○ Soft Targeted ads ○ Video ads ○ Text/Image ads ○ Others (Please describe)

(11) You select "Q10/Choice" for influencer-based ads. Could you please elaborate on this? Definitions of various ad types are provided below for reference. *(This question is displayed if the participant selected this ad format in Q8. Choice from Q10 is carried forward.)*

(12) You select "Q10/Choice" for soft targeted ads. Could you please elaborate on this? Definitions of various ad types are provided below for reference. *(This question is displayed if the participant selected this ad format in Q8. Choice from Q10 is carried forward.)*

(13) You select "Q10/Choice" for video ads. Could you please elaborate on this? Definitions of various ad types are provided below for reference. *(This question is displayed if the participant selected this ad format in Q8. Choice from Q10 is carried forward.)*

(14) You select "Q10/Choice" for text ads. Could you please elaborate on this? Definitions of various ad types are provided below for reference. *(This question is displayed if the participant selected this ad format in Q8. Choice from Q10 is carried forward.)*

A.4 Benefits and Concerns

(15) How much do you agree or disagree with the following statements about some possible benefits of seeing targeted ads on social media platforms? *(1: Strongly disagree; 2: Somewhat disagree; 3: Neither agree nor disagree; 4: Somewhat agree; 5: Strongly agree;)* ○ Ads help me to get a discount ○ In general, I find advertising on social media platforms to be relevant to my interests ○ I can explore a product or service offered by different brands/compare different brands ○ Ads help connect me with small businesses and support their growth ○ Ads are convenient and save time

(16) How much do you agree or disagree with the following statements about possible concerns related to the quality of targeted ads you encounter on social media platforms? *(1: Strongly disagree; 2: Somewhat disagree; 3: Neither agree nor disagree; 4: Somewhat agree; 5: Strongly agree;)* ○ I receive poor quality ads (the ad seems low quality and poorly designed) ○ I receive clickbait ads (e.g. ad designed to attract attention using sensationalist headlines or cheap gimmick. It makes users want to click on it and find out what it's about) ○ In general, I find advertising on social media platforms distracting and not useful ○ I receive offensive, uncomfortable, or distasteful ads (the ad uses repulsive, gross, provocative, or overly sexualized content) ○ I receive pushy or manipulative ads that demand me to do something, e.g., buy more stuff ○ Other concerns (describe)

(17) How much do you agree or disagree with the following statements about possible concerns related to security and privacy issues about targeted ads you encounter on social media platforms? *(1: Strongly disagree; 2: Somewhat disagree; 3: Neither agree nor disagree; 4: Somewhat agree; 5: Strongly agree;)* ○ Encounter fraudulent advertising (the ad is engaging in false advertising or appears to be lying/fake) ○ Ad system could access my devices (e.g. microphone, camera, text messages) to track my activities ○ Ads could sell my data to 3rd parties (e.g. ad agencies, other companies, social media platforms, or government) ○ Ads could collect my data and lead to possible data breach ○ Other concerns (describe)

(18) How much do you agree or disagree with the following statements about possible concerns of seeing ads targeting personal attributes of people on social media platforms? *(1: Strongly disagree; 2: Somewhat disagree; 3: Neither agree nor disagree; 4: Somewhat agree; 5: Strongly agree;)* ○ I receive ads on sensitive topics such as weight-loss programs or online mental health prescription services ○ I receive political ads (the ad is trying to push a political point of view onto the user, or uses political themes to sell something) ○ I receive religious ads (the ad is trying to push a religious point of view onto user, or uses religious themes to sell something) ○ I receive ads targeting my demographic attributes such as age, gender, ethnicity/race ○ I receive finance-related ads e.g. credit card, loans, mortgage financing ○ I usually find advertising on social media platforms irrelevant because they are not tailored to my interest ○ Other concerns (describe)

A.5 Use of ad settings

(19) This is an attention check question. Please type following into the box: "I am paying attention".

(20) When seeing ads on social media platforms, people often engage in various behaviors to manage ads. Examples of these behaviors are shared below:
Ad management strategy: Ignore the ad and scroll past it
Ad management strategy: Speed up the video ads
Ad setting: Report ads

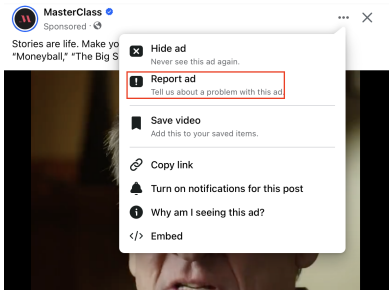


Figure 7: Screenshot for "Ad setting: Report ads."

Ad setting: Hide ads

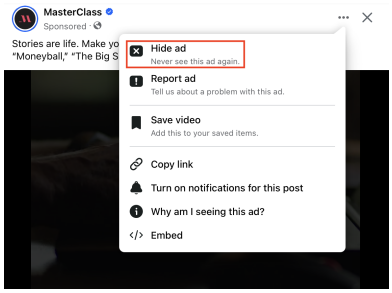


Figure 8: Screenshot for "Ad setting: Hide ads."

Ad setting: Turn off notification on ad comments/posts

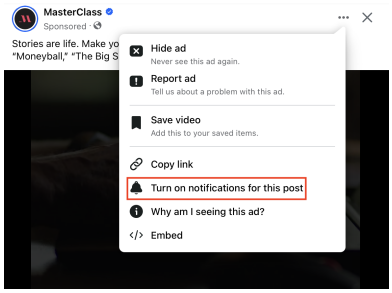


Figure 9: Screenshot for "Ad setting: Turn off notification on ad comments/posts."

Ad setting: Ad Preferences and Settings page
Ad setting: Unfollow ad pages
Ad setting: Turn off location for the social media app in phone settings

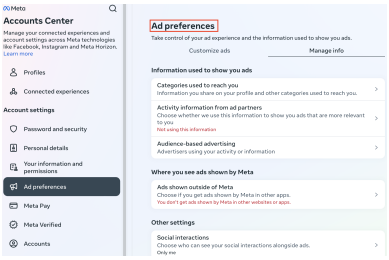


Figure 10: Screenshot for "Ad setting: Ad Preferences and Settings page."

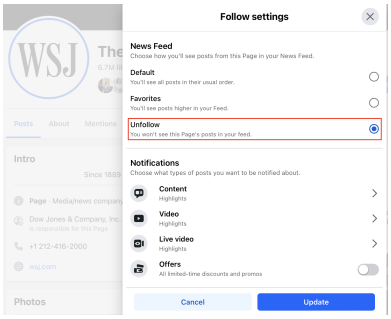


Figure 11: Screenshot for "Unfollow ad pages."

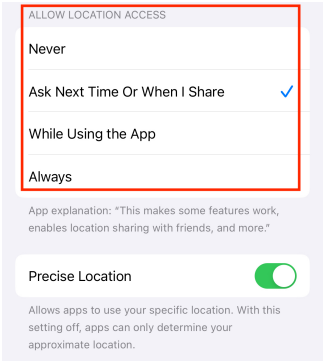


Figure 12: Screenshot for "Turn off location for the social media app in phone settings."

(21) When seeing ads on social media platforms, which of the following behaviors did you previously engage with? Please select all that apply. Examples of these behaviors are shared above for reference. ○ Ad setting: Hide ads ○ Ad setting: Report ads ○ Ad setting: Unfollow ad pages ○ Ad setting: Turn off location for the social media app in phone settings ○ Ad setting: Ad Preferences and Settings page ○ Ad setting: Turn off notification on ad comments/posts ○ Ad management strategy: Speed up the video ads ○ Ad management strategy: Ignore ad and scroll past it ○ I use some other ad management strategy ○ I don't use any ad settings
(22) How often do you engage with the following behaviors? Examples of these behaviors are shared above for reference.

(*The choices carry forward from Q23.*) (*1: Never; 2: Rarely; 3: Sometimes; 4: Often; 5: Always*) ○ Ad setting: Hide ads ○ Ad setting: Report ads ○ Ad setting: Unfollow ad pages ○ Ad setting: Turn off location for the social media app in phone settings ○ Ad setting: Ad Preferences and Settings page ○ Ad setting: Turn off notification on ad comments/posts ○ Ad management strategy: Speed up the video ads ○ Ad management strategy: Ignore ad and scroll past it ○ I use some other ad management strategy

(23) You shared you have not engaged in behaviors (ad settings or ad management strategies) to manage ads on social media platforms. We are interested to know why. Does any of the following reasons apply to you? [Select all that apply] (*This question is displayed if the participant does not use any ad setting.*) ○ I don't know how to access ad settings ○ It is useless because it will not reduce repetitive ads ○ I don't have time ○ Others

(24) How confident do you feel in engaging with various behaviors to manage ads on social media platforms? Examples of these behaviors are shared below for reference. (*1: Not at all confident; 2: Slightly confident; 3: Moderately confident; 4: Very confident; 5: Extremely confident;*) ○ Ad management strategy: Ignore the ad and scroll past it ○ Ad management strategy: Speed up the video ads ○ Ad setting: Report ads ○ Ad setting: Hide ads ○ Ad setting: Unfollow ad pages ○ Ad setting: Turn off location for the social media app in phone settings ○ Ad setting: Turn off notification on ad comments/posts

(25) If there was a magic tool in social media that could manage ads, what types of features would you like this tool to have specifically related to web trackers and advertisers? [Select all that apply] ○ Ads should be shown at specific times of the user's choosing ○ Ads should be shown in a separate window within the social media app ○ Users should be able to filter ads based on preferences, e.g., filter irrelevant or repetitive ads ○ Add a "blue tick mark" for ads verified by social media platform as safe ○ Establish a ranking system for ads using metrics such as positive review count ○ Other (Please describe)

A.6 Religion

(26) What is your present religion, if any? ○ Hindu ○ Muslim (including "Islam, Islamic, Nation of Islam, etc.") ○ Christian (including Protestant, Catholic, etc.) ○ Jain ○ Sikh ○ Buddhist ○ No religion, not a believer (including atheist, agnostic) ○ Prefer not to disclose ○ Other (Please describe)

(27) How important is religion in your life? ○ 1: Not at all important ○ 2: Slightly important ○ 3: Moderately important ○ 4: Very important ○ 5: Extremely important

(28) People practice their religion in different ways. How often do you practice your religion, for example, pray or take part in religious services? ○ Never ○ Rarely ○ Occasionally ○ Often ○ Very often

(29) How do your religious values impact your experience with ads (positive or negative) on social media platforms, if at all? Please describe your experience.

(30) What is your current living status? ○ Alone ○ With one or more roommates or domestic partners ○ Nuclear (i.e. A family model of two parents and or children) ○ Joint (i.e. a larger family type comprising members of an unilinear descent group, living together with spouses and offspring in a single household, with one member holding authority over all) ○ Other (Please describe)

A.7 Cultural dimensions

We are interested in knowing how your ad experiences connect to your personal values. We will ask a set of likert scale questions below to understand how much you agree with statements about personal values.

(31) *Vertical collectivism.* Please use the following scale to indicate how much you agree with the following statements. (1: Strongly disagree; 2: Disagree; 3: Neither agree nor disagree; 4: Agree; 5: Strongly agree) ○ Parents and children must stay together as much as possible ○ It is my duty to take care of my family, even when I have to sacrifice what I want ○ Family members should stick together, no matter what sacrifices are required ○ It is important to me that I respect the decisions made by my groups

(32) *Vertical individualism.* Please use the following scale to indicate how much you agree with the following statements. (1: Strongly disagree; 2: Disagree; 3: Neither agree nor disagree; 4: Agree; 5: Strongly agree) ○ It is important that I do my job better than others ○ Winning is everything ○ Competition is the law of nature ○ Please select "3: Neither agree nor disagree" to verify that you are paying attention

(*Participants need to select "3: Neither agree nor disagree" to verify that they are paying attention to proceed to the next page. If an incorrect answer is selected, show an error message, "Thank you for taking the time to answer a few questions. Unfortunately, you do not qualify for this particular survey, but we do hope to hear from you in the future."*)

(33) *Horizontal collectivism.* Please use the following scale to indicate how much you agree with the following statements. (1: Strongly disagree; 2: Disagree; 3: Neither agree nor disagree; 4: Agree; 5: Strongly agree) ○ If a coworker gets a prize, I would feel proud ○ The well-being of my coworkers is important to me ○ To me, pleasure is spending time with others ○ I feel good when I cooperate with others

(34) *Horizontal individualism.* Please use the following scale to indicate how much you agree with the following statements. (1: Strongly disagree; 2: Disagree; 3: Neither agree nor disagree; 4: Agree; 5: Strongly agree) ○ I'd rather depend on myself than others. ○ I rely on myself most of the time; I rarely rely on others. ○ My personal identity, independent of others, is very important to me.

(35) *Uncertainty Avoidance.* Please use the following scale to indicate how much you agree with the following statements. (1: Strongly disagree; 2: Disagree; 3: Neither agree nor disagree; 4: Agree; 5: Strongly agree) ○ It is important to have instructions spelled out in detail so that I always know what I'm expected to do. ○ It is important to closely follow instructions and procedures. ○ Rules and regulations are

important because they inform me of what is expected of me. ○ Standardized work procedures are helpful. ○ Instructions for operations are important.

A.8 Demographics

(36) What age bracket do you fall under? ○ 18-24 ○ 25-34 ○ 35-44 ○ 45-54 ○ 55-64 ○ 65-74 ○ 75+

(37) What is your gender identity? ○ Woman ○ Man ○ Non-binary ○ Prefer not to disclose ○ Prefer to self-describe

(38) Choose one or more races/ethnicity that you consider yourself to be. (Select all that apply) *(This question is displayed if country of origin is India.)* ○ Indo-Aryan ○ Dravidian ○ Prefer not to disclose ○ Other Minority Group (Please describe) ○ Prefer to self-describe

(39) Choose one or more races/ethnicity that you consider yourself to be. (Select all that apply) *(This question is displayed if country of origin is Bangladesh.)* ○ Bengali ○ Prefer not to disclose ○ Other indigenous ethnic group (Please describe) ○ Prefer to self-describe

(40) Choose one or more races/ethnicities that you consider yourself to be. (Select all that apply) *(This question is displayed if country of origin is Pakistan.)* ○ Punjabi ○ Pashtun (Pathan) ○ Sindhi ○ Saraiki ○ Muhajirs ○ Balochi ○ Prefer not to disclose ○ Other minority group (Please describe) ○ Prefer to self-describe

(41) Choose one or more races/ethnicity that you consider yourself to be. (Select all that apply) *(This question is displayed if country of origin is United States.)* ○ American Indian or Alaska Native ○ South Asian ○ Asian ○ Black or African American ○ Hispanic or Latino ○ Middle Eastern ○ Native Hawaiian or Pacific Islander ○ White ○ Prefer not to disclose ○ Prefer to self-describe

(42) What is the highest level of school you have completed or the highest degree you have received? ○ Less than high school ○ High school or equivalent ○ Some college, currently enrolled in college, or two-year associate's degree ○ Bachelor's degree ○ Some graduate school, or currently enrolled in graduate school ○ Master's or professional degree ○ Doctorate degree

(43) What is your current employment status? (Select all that apply) ○ Employed full-time ○ Employed part-time ○ Out of work and looking for work ○ Out of work but not currently looking for work ○ Stay-at-home-parent ○ Student ○ Military ○ Retired ○ Unable to work

(44) Do you have a college degree or work experience in computer science, software development, web development or similar computer-related fields? ○ Yes ○ No

(45) How much total combined income did all members of your household earn in the last year? *(This question is displayed if the participant selects India)* ○ Below 2,00,000 INR ○ 2,00,001 - 5,00,000 INR ○ 5,00,001 - 10,00,000 INR ○ 10,00,001 - 20,00,000 INR ○ 20,00,001 - 50,00,000 INR ○ Above 50,00,000 INR ○ Prefer not to disclose

(46) How much total combined income did all members of your household earn in the last year? *(This question is displayed if the participant selects Bangladesh)* ○ Below 2,00,000 BDT ○ 2,00,001 - 5,00,000 BDT ○ 5,00,001 - 10,00,000 BDT ○ 10,00,001 - 20,00,000 BDT ○ 20,00,001 - 50,00,000 BDT ○ Above 50,00,000 BDT ○ Prefer not to disclose

(47) How much total combined income did all members of your household earn in the last year? *(This question is displayed if the participant selects Pakistan)* ○ Less than 200,000 PKR ○ 200,000 - 500,000 PKR ○ 500,001 - 1,000,000 PKR ○ 1,000,001 - 2,000,000 PKR ○ 2,000,001 - 5,000,000 PKR ○ More than 5,000,000 PKR ○ Prefer not to disclose

(48) How much total combined income did all members of your household earn in the last year? *(This question is displayed if the participant selects United States)* ○ Less than $20,000 ○ $20,000 to $34,999 ○ $35,000 to $49,999 ○ $50,000 to $74,999 ○ $75,000 to $99,999 ○ Over $100,000 ○ Prefer not to disclose

(49) Please share your feedback about the survey. [optional]

B Appendix: Full Mediation Analysis Results

Variable	b	SE	p-value
DV: Ad Management Behavior			
Concern: Ads Targeting Sensitive Attributes	0.395	0.118	.001***
DV: Perceived Benefits of Targeted Ads			
Culture: Horizontal Collectivism	0.223	0.067	.001***
Culture: Vertical Individualism	0.135	0.051	.008**
Culture: Vertical Collectivism	0.267	0.059	<.001***
Religion: Hinduism	0.095	0.104	.361
Religion: Christianity	-0.301	0.118	.011*
Religion: minorities	-0.421	0.185	.023*
Religion: no religion	-0.132	0.186	.478
DV: Concern: Ads Targeting Sensitive Attributes			
Culture: Horizontal Collectivism	0.134	0.053	.012*
Culture: Vertical Individualism	0.137	0.046	.003**
Country: Bangladesh	-0.178	0.104	.086
Country: Pakistan	-0.282	0.106	.008**
Country: India	-0.103	0.109	.342
DV: Concern: Security and Privacy Issues			
Culture: Horizontal Individualism	0.149	0.062	.016*
Country: Bangladesh	-0.473	0.139	.001***
Country: India	-0.449	0.139	.001***
Country: Pakistan	-0.453	0.139	.001***
DV: Culture: Vertical Individualism			
Country: Bangladesh	0.448	0.102	<.001***
Country: Pakistan	0.623	0.102	<.001***
Country: India	0.846	0.102	<.001***
DV: Culture: Vertical Collectivism			
Country: Bangladesh	0.347	0.092	<.001***
Country: Pakistan	0.371	0.093	<.001***
Country: India	0.391	0.092	<.001***

Table 3: Results of the path model for perceptions and behaviors (dependent variables). Significant effects are highlighted in grey.

C Appendix: Full Mediation Analysis Results, including age

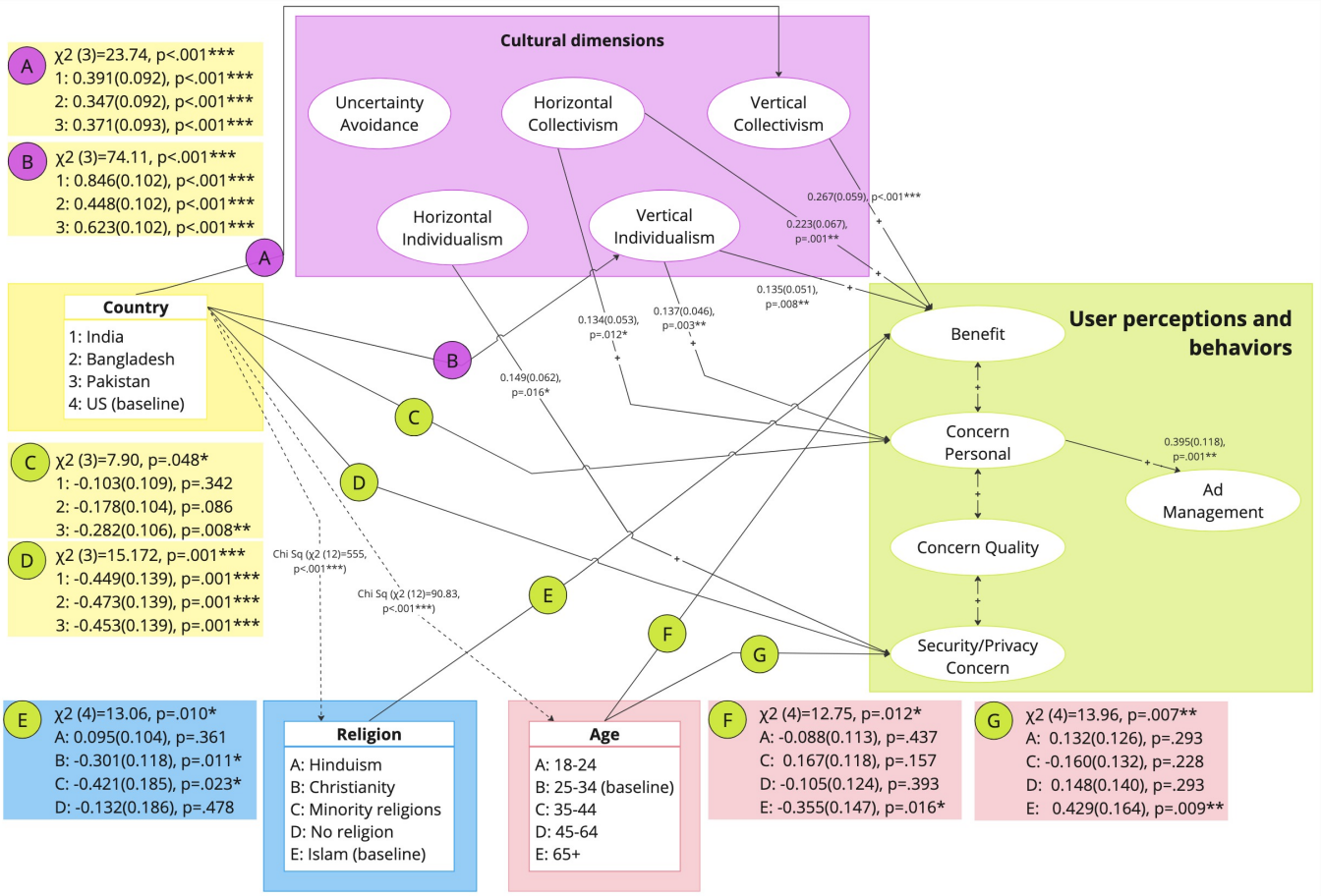


Figure 13: Detailed path model showing the mediating effects of culture and religion on cross-country variances, while also accounting for participants' age.

Variable	b	SE	p-value
DV: Ad Management Behavior			
Concern: Ads Targeting Sensitive Attributes	0.395	0.118	.001***
DV: Perceived Benefits of Targeted Ads			
Culture: Horizontal Collectivism	0.223	0.067	.001***
Culture: Vertical Individualism	0.135	0.051	.008**
Culture: Vertical Collectivism	0.267	0.059	<.001***
Religion: Hinduism	0.095	0.104	.361
Religion: Christianity	-0.301	0.118	.011*
Religion: minorities	-0.421	0.185	.023*
Religion: no religion	-0.132	0.186	.478
Age: 18-24	-0.088	0.113	.437
Age: 35-44	0.167	0.118	.157
Age: 45-64	-0.105	0.124	.393
Age: 65 and older	-0.355	0.147	.016**
DV: Concern: Ads Targeting Sensitive Attributes			
Culture: Horizontal Collectivism	0.134	0.053	.012*
Culture: Vertical Individualism	0.137	0.046	.003**
Country: Bangladesh	-0.178	0.104	.086
Country: Pakistan	-0.282	0.106	.008**
Country: India	-0.103	0.109	.342
DV: Concern: Security and Privacy Issues			
Culture: Horizontal Individualism	0.149	0.062	.016*
Country: Bangladesh	-0.473	0.139	.001***
Country: India	-0.449	0.139	.001***
Country: Pakistan	-0.453	0.139	.001***
Age: 18-24	0.132	0.126	.293
Age: 35-44	-0.160	0.132	.228
Age: 45-64	0.148	0.140	.293
Age: 65 and older	0.429	0.164	.009**
DV: Culture: Vertical Individualism			
Country: Bangladesh	0.448	0.102	<.001***
Country: Pakistan	0.623	0.102	<.001***
Country: India	0.846	0.102	<.001***
DV: Culture: Vertical Collectivism			
Country: Bangladesh	0.347	0.092	<.001***
Country: Pakistan	0.371	0.093	<.001***
Country: India	0.391	0.092	<.001***

Table 4: Results of the path model, including age, for perceptions and behaviors (dependent variables). Significant effects are highlighted in grey.