# Prioritizing Minimalistic Design: The Negative Impact on Users' Control over Privacy in Facebook's Ad Preferences

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## Abstract

In 2020, Facebook initiated an overhaul of their user interface. Users saw nearly all sections of their Facebook profile "upgraded" to a modern, minimalistic design. The more intrepid user would have also detected drastic changes to the interface for *ad preferences*, an interface specifically designed to give users control over how Facebook categorizes them for showing targeted advertisements. In this work, we take a first step to understand the impact of these changes in the *ad preferences* interface on users by conducting a *heuristic evaluation*. Our analysis reveals that while there were some improvements in usability, overall these changes had a negative impact on the usability of the ad preferences interface. This has implications on the extent to which Facebook users can control their privacy by limiting exposure of their data to third party advertisers.

## 1. Introduction

Today, Facebook is used by billions of users [14] and millions of advertisers [15] trying to reach those users. These advertisers often draw inferences from a user's Facebook data to show targeted ads personalized to the interest topics and behavior of that user. Targeting ads engenders more relevant and engaging experiences for users, maximizing value for both the business and its (potential) customers [16]. Consequently, Facebook draws from the personal information uploaded by its billions of users, as well as their online activity outside of the platform, to develop and deploy data-driven algorithms that tailor ads to users' interests.

Such personalization algorithms synthesize a diverse array of user data including location, demographic traits, interests, online behavior, and one's network connections [6]. They also make inferences based on users' online activity such as content shared, liked, or searched within and outside of the platform. Advertisers specify which of these target characteristics and online user behaviors are relevant, and Facebook automatically matches users to relevant ads [17,18]. In other words, Facebook's interface for advertisers allows them to target their ads to those with an interest in particular topics or businesses, such as women ages 18-25 in California who like Cornetto ice-cream, or men in the Boston Area with a January Birthday who like Bailey's Irish Cream (these are actual categories that can be used by Facebook's algorithm). Such powerful personalization allows advertisers to show relevant ads to users.

Nonetheless, such accurate algorithms can feel invasive, creating a subpar or even harmful ad experience. Questions have arisen around use of ad targeting in social media and how this can violate users' privacy [19]. A widely publicized incident was the Cambridge Analytica data scandal in which personal data from over 80 million Facebook users was profiled and used by the Cambridge Analytica firm to precisely target political advertisements. In addition, Facebook's algorithm has been criticized for mis-categorizing users, in some cases exposing users to offensive or sensitive content [1]. To ameliorate these issues, Facebook allows users to view and delete the categories its algorithms have associated with them (e.g., interest-based categories), thereby giving users some control over their tailored ad experience. The interface that enables Facebook users to manage these categories is the *ad preferences* interface.

In 2020, Facebook undertook an overhaul of their user interface, including the ad preferences interface [13,20]. For a transition period of a few months, Facebook also provided the option to switch between the pre-change view (called classic Facebook view) and the new interface [3]. Although the new interface followed a more minimalist and flat aesthetic design, it was not clear ***what aspects of the ad preferences interface were most impacted by the change?*** Perhaps more importantly, ***How did this new Facebook design impact the utility of ad preferences for controlling users' privacy from advertisers*?** In this work, we answer these questions using a heuristic evaluation conducted by three of the researchers in order to assess the privacy and usability impact of the current ad preferences interface change. Consequently, our work paves the way for future usable privacy-controlling interface designs in social media.

## 2. Methodology

First, we compared the classic interface with the new interface to identify what changed for ad preferences. Next, we evaluated how these changes impacted support for usable privacy via a heuristic evaluation by three experts. Two common approaches for evaluating the usability of an interface are cognitive walkthrough and heuristic evaluation. While research shows that both methods can uncover similar numbers of usability issues, cognitive walkthroughs may be

more effective for systems meant to be used by novices, while heuristic evaluations are suited for systems where users have experience with similar systems [7]. Since Facebook and the ad preferences settings utilize many standard design widgets and elements of other social and web technologies [2,21], we conducted a heuristic evaluation. Moreover, research shows that using multiple evaluators who cover both usability and domain expertise leads to identifying a wider variety of usability issues [10]. Thus, we followed guidelines on number of evaluators and had three researchers [12] conduct the evaluations as domain experts (they study Facebook and are active users) as well as usability experts (they are trained in understanding and applying usability principles).

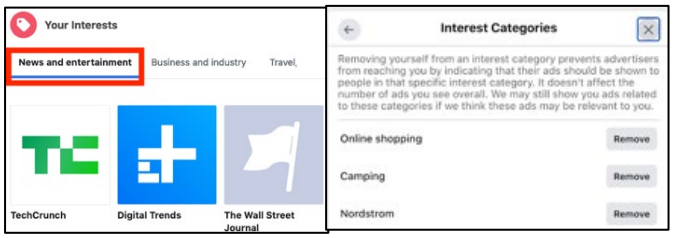
The researchers evaluated both the classic Facebook ad settings interface and the new ad settings interface. They used Nielson's commonly accepted 10 usability heuristics (see chart in section 4.1) [4,8,11] and evaluated whether users are able to access, view, and change their categorizations. The researchers evaluated the ad settings interface with respect to each of the heuristics (e.g., Error Prevention) and noted violations (e.g., user is allowed to make a mistake performing the task). The final list of violations is a compilation of all violations identified by the researchers. The researchers then independently assigned a severity rating to each violation (i.e., 0=no problem, 1=cosmetic problem that does not affect usage, 2=minor usability problem that is easily recoverable, 3=major usability problem that is difficult or tedious to recover from, 4=catastrophic problem that user cannot recover from). The final score is an average of the researchers' severity scores, and we use it to evaluate the usability trade-offs that come with prioritizing minimalism and aesthetics in the new interface.

## 3. Facebook's Ad Preference Interface Change

Throughout its existence, Facebook has undergone many interface changes [22]. For instance, in 2009 Facebook introduced the "wall" feature and made user privacy settings more granular. The latest round of substantial user interface changes was in July 2020 when Facebook introduced a more minimalist, flat aesthetic in line with current web design trends [13,20]. Aside from changing the Facebook users' homepage, they also modified the ad preference interface that contains features allowing Facebook users to self-regulate data access from third party advertisers.

***What Changed.*** Today, Facebook provides a personalized ad preference interface to let users control the targeted advertisements they see [23]. This personalized interface shows the categories Facebook associates with the user. Facebook's advertising system uses these categories to show targeted and personalized advertisements from third-party advertisers. This interface also allows users to limit the reach of advertisers by removing these categories. Here we describe the pre- and post-July 2020 ad preferences interface (compared by using "switch to classic Facebook" feature).

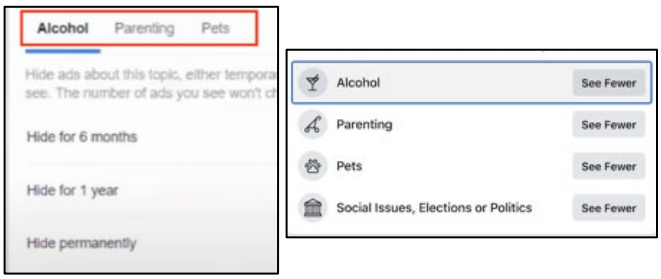
**Interest categories** show topics that Facebook infers about interests of a particular user and allows the user to remove some topics [24]. The classic ad preferences interface organized interest groups into fifteen distinct higher-level categories ranging from News and Entertainment, Business and industry, to Lifestyle and Culture. Each of these categories were presented as a tab (Figure 1a). Each tab further contained a list of interests (in the form of entity names) which Facebook algorithmically determined could be relevant to the user. Users could remove any of these interests to signify that they do not want to be targeted according to that interest by using an "x" (visible for each interest upon hovering over the image). The new ad preferences interface (Fig. 1b) no longer contains the higher-level interest categories and presents all interests as a single flat list. In this new interface, the "remove" button is featured more prominently than in the earlier design.




(a) (b)

Figure 1. (a) Screenshot of Facebook's classic interface for Interest Categories. The higher-level interests categories (e.g., News and entertainment, highlighted) are at the top and the specific interests (entities like TechCrunch) for the currently highlighted category are listed below. (b) Facebook's new interface only lists each interest and no longer has an icon but has a prominent remove button.

**Other categories** help advertisers target users using non-interest categories (e.g., "mobile device users") [9]. In the classic interface, there were some non-interest-based categories used to target users (e.g., whether they use the Facebook mobile app). Those categories were not fixed across all users and to remove a category, the user would have to hover over the desired category to reveal an "x" button and then click that "x". In the new interface, users are categorized




(a) (b)

Figure 2. (a) Facebook's classic interface for Ad topics, with options to stop targeting for 6 months, 1 year, or permanently. (b) Facebook's new interface for Ad topics with a new topic, but only options to only reduce ads.

based on only four categories—Mobile network or device users, Potential mobile network or device change, Recent mobile network or device change, and WiFi usage. The new interface presents a distinct "Remove" button at the side of each category.

**Ad topics** enable a user to choose the frequency with which they see pre-defined ad topics. Facebook's classic interface offered three such pre-defined topics: Alcohol, Parenting, and Pets (highlighted in Figure 2a). Users could temporarily hide ads pertaining to a topic by clicking 6 months, 1 year, or permanently. The new interface (Fig. 2b) contains an additional topic (Social Issues/Elections or Politics) but ads related to a topic cannot be turned off; instead, a "see fewer" option is available [24].

## 4. Understanding the Impact of Ad Preference Change via Heuristic Evaluation

Once we identified the parts of Facebook's ad interface which allow users to access, view, and manage their categorizations, we performed a heuristic evaluation of the classic as well as new interfaces to understand how a streamlined design affects the ability to control one's privacy for ad targeting. Three of the authors performed independent evaluations of the interfaces and the final list of heuristic violations is shown in Table 1.

| | |
|---|---|
| 0 | Don't agree this is a usability problem |
| 1 | Cosmetic problem |
| 2 | Minor usability problem |
| 3 | Major usability problem; important to fix |
| 4 | Usability Catasrophe; imperative to fix |

| Classic Interface | New Interface |
|---|---|
| **1. Visibility of System Status** | |
| 0 Ad Topics indicates if Alcohol, Parenting, and Pets are being used as personalization criteria | 2.67 Ad Topics can lower how much Alcohol, Parenting, Pets, Social Issues/Elections & Politics will still be used as personalization criteria, Unclear by how much |
| 0 Can see all high level groupings of interest categories (news and entertainment, etc.) | 2 Cannot see high level groupings of interest categories despite them still being used for advertising in the system |
| **2. Match Between System and the Real World** | |
| 0 Shows brand name and icon, Associating icon with real world brand allows easy association with brand names | 1.67 Shows brand name only, may not be recognizeable, hard to distinguish between same names (e.g., Misfits the band vs Misfits the grocery delivery service) |
| 3 User interests are not always categorized accurately | 2.67 User interests not always accurate, but some interests no longer being used |
| 1.67 "Hide Ads" only removes ad topics as personalization criteria, user could still potentially see topic-related ads | 0 "See Fewer" more accurately reflects that user may still see some of the topic-related ads they are trying to see less of |
| **3. User Control and Freedom** | |
| 0 User can turn off targeting for a persistent ad topic either temporarily or permanently | 2.33 User cannot remove targeting from a persistent ad topic, only "See Fewer" |
| 1.33 Course grain options for controlling whether ads are personalized based on activity outside Facebook platform | 0 Can view and specify which sources outside of Facebook platform are used to personalize ads |
| **4. Consistency and Standards** | |
| 1.67 Different options/menu appear hovering over brand icon | 0 Standard button to Remove or Undo is always visible next to brand name |
| **5. Error Prevention** | |
| 0 Can remove certain profile fields from targetting, Option to remove ad topics for 6 months, 1 year, or Permanently | 2.67 Can still remove certain profile fields from targetting criteria, but ad topics only support "See Fewer" and can still lead to miscatagorization errors |
| **6. Recognition Rather Than Recall** | |
| 2 Remove button only appears upon hover over brand icon | 0 Persistently present buttons indicate action you can take at the moment |
| 0 Psychology shows pictures are much more memorable and recognizeable, thus icons are quickly recognizable | 1.67 Relying only on text and no icons makes it harder to recognize a brand |
| **7. Flexibility and Efficiency of Use** | |
| 0 Efficient way to find relevant categories – utilizes visual chunking to group information into high level groups | 3.33 All categories and interests are compressed into flat lists. Makes it much less efficient to locate categories or detect a theme in the categorizations |
| **8. Aesthetic and Minimalist Design** | |
| 1.33 Interface presents categories in many different screens, tabs, and sections, organized by themes | 0 Much fewer sections, categories and interests are combined into a few giant flat lists. The design may be optimized for mobile standards |
| **9. Help Users Recognize, Diagnose, and Recover From Errors** | |
| 0 User can view and correct miscategorized interests | 0 User can view and correct miscategorized interests |
| **10. Help and Documentation** | |
| 0 The classic interface had several pages of explanation about how Facebook ads work | 0 FAQ's are now located at the top of each section to inform the user and answer common questions |
| | 0 The new interface has "learn more" links for each section that give additional information about the topic |

Table 1 Summary of our heuristic evaluation of the classic and new ad settings interface for Facebook. Each heuristic violation has a color coded severity rating to its left where higher numbers are more severe (see table above which contains a key explaining the severity ratings).

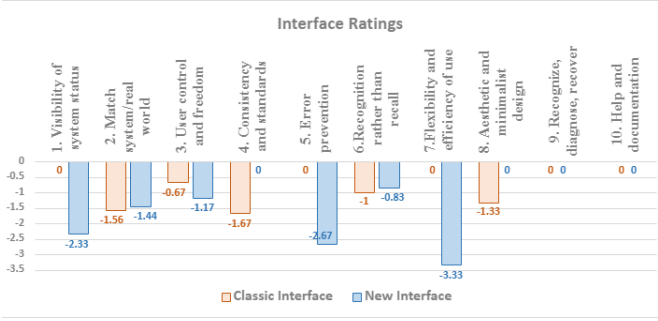



Figure 3. Summary of severity ratings for classic verse new interface. The more negative the rating the more usability is negatively impacted.

We summarize in Figure 3 the key differences identified in Table 1 by comparing average severity ratings for each heuristic. Our analysis reveals that neither the classic interface nor the new interface performed uniformly better across all dimensions. Specifically, out of the ten heuristics that we evaluated, the classic interface comparatively did better than the new interface in terms of Visibility of System Status, User Control and Freedom, Error Prevention, and Flexibility and Efficiency of Use. On the flip side, the new interface did better on the dimensions of Match between system/real world, Consistency and Standards, and Aesthetic and Minimalist Design. Table 1 identifies interface elements that support/violate a usability principle with a severity rating (higher score means more negative impact). Now we discuss how these changes negatively and positively impact the usability of the ad setting interface and user privacy.

**Negative impact:** We found that some of the changes in the Ad preference interface may cause users to feel like they have less control over the personalized ad targeting. These changes negatively impact the usability of the interface as well as the privacy of the users. Specifically, in the new Ad Topics section, the option to "see fewer" ads replaced earlier options allowing users to disable specific targeting permanently (or for specific time periods). Consequently, the new interface no longer guarantees that a user will stop seeing certain type of ads altogether. Furthermore, "see fewer" is an ambiguous phrase in communicating how choosing this option might affect a user's experience with Facebook.

Our heuristic evaluation also highlights that Error Prevention, Visibility, and Recognition rather than Recall heuristics are affected by the interface change, ultimately creating a potential negative impact on user privacy. For example, the previous interface presented fine-grained category names and associated images (e.g., a brand's logo) for the Facebook-inferred interests so that users could easily recognize and browse through them. The shift to a minimalist interface forces the user to view flat lists of categories without any visual hierarchy and little organizing structure. Using only text is arguably more "modern," due to the minimalistic nature. However, it has also made it harder for users to browse through and make sense of interest categories without the aid of visuals. Such changes could be detrimental for the users' ability to limit privacy intrusion and targeting from advertisers.

**Positive impact:** In spite of the negative impact on usability and privacy found through our heuristic evaluation, we did uncover a few positive impacts of the new Facebook interface. For instance, the new interface allows the user to view information and FAQs in every section. This allows the user to be more informed on how their information is being used (e.g., their Facebook activity) and how to address privacy concerns. Furthermore, for the interest and other categories section, the current interface prominently displays new "remove" buttons that may actually help the user have more control over how they are targeted by ads. Finally, even though there is loss of user control to hide all ads for a given ad topic, at least the interface makes it transparent that it does not support that feature.

## 5. Moving Forward

A point of interest for future studies is the *advertiser's* Facebook interface in relation to the Interest Categories section. In the current version of the platform, unlike the user, advertisers are *not* limited to viewing a flat list of interests. Rather, advertisers have access to various categories that cover nearly all the interest categories that the user was able to see in the classic interface. From an advertiser's perspective, everyone can be categorized among three groups: demographics, interests, and behaviors. This interface helps the advertiser to specifically target their audience. Future work may investigate the privacy implications of this asymmetry between the user and advertiser interface with respect to algorithmic controls.

Our research more broadly raises questions about tradeoffs between usability, aesthetics, and privacy. Future work may seek to understand the design decisions made in interface changes like the ones we describe in this paper, and how they impact the usable privacy of a system. For instance, companies like Facebook must negotiate among competing priorities (e.g., the drive to stay modern and unify the look of their product lines [5]). This study points to the need for new design processes that ensure aesthetics do not sacrifice a user's ability to manage their privacy.

This work takes an initial step in measuring the change to usable privacy when an aesthetically-driven user interface change occurs. By using heuristic evaluation, we show that such shifts result in multidimensional changes to a platform's usability. Such impact should be addressed during the design process to ensure users can continue to effectively manage their privacy.

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