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Can cat videos harm your relationships? Hedonic and utilitarian content as technological antecedents of phubbing

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ABSTRACT

This paper investigates how hedonic and utilitarian content consumption and the habitual use of social media, specifically Facebook, affect phubbing behavior. The research model was tested using a cross-sectional survey (N = 220) conducted via Prolific. The participants were chosen from among those who use Facebook as their most frequent social media service on their smartphones. The results showed that utilitarian content has a more prominent effect on phubbing than hedonic content. Furthermore, for females, hedonic content positively affects phubbing when it is consumed habitually, and the effect of habitual use on phubbing differs significantly between males and females. These results suggest that technological affordances can induce phubbing behavior differently between males and females and that social media providers should consider the customization of displayed content in a way that will not induce phubbing behavior. The results also provide implications for social contexts and different relationships. Accordingly, the consumption of hedonic and utilitarian social media content should be regulated (e.g., by parents, schools), and education regarding content consumption should be provided. This study contributes to phubbing research by providing a technological perspective on its antecedents.

1. Introduction

Inspired by the non-tech world, social media, in essence, has not created different types of interactions between humans; instead, it has taken them to a higher speed and bigger scale (Ali et al., 2018). This amplification can even overshadow real face-to-face interactions. Phubbing, a phenomenon known as snubbing companions in social settings by paying attention to mobile phone, is increasingly a cause of concern due to its detrimental effects on relationships. Addictive use of mobile phones has so far been seen as the culprit of phubbing behavior (e.g., Chotpitayasunondh & Douglas, 2016; Karadağ et al., 2015). However, phubbing can also have other information systems (IS)-related antecedents. For instance, content that is both fun and informative keeps us on social media platforms longer than we anticipate (Ali et al., 2018). Therefore, it is necessary to investigate IS affordances as plausible antecedents of phubbing behavior as well. In that respect, in the information age in which we live, content is a good starting point.

Notifications and presence features that induce active participation by informing users about others' availability and activities or scarcity in the form of temporarily available snaps and statuses are only some of the habit-forming features present in social media (Ali et al., 2018). "Pull to refresh," an action that is similar in idea to pulling on the handle of a slot machine, or "infinite scroll," which induces swiping through content endlessly, are all features that are designed to keep us on these platforms longer (Ali et al., 2018; Andersson, 2018). Yet, among the most hooking features of social media are reward and infotainment—that is, content personalized to our taste for fun and utility. Social media platforms harness these two types of content to promote users' consumption: some can watch cat videos for hours, while others get their news on social media. Considering these features, social media use can create communication and social overload (Chen & Lee, 2013; Zhang et al., 2016). As a result, users may start devoting more attention to online happenings than to embodied reality. However, research has yet to investigate the effects of content (or any other habit-forming social media features) on phubbing behavior.

Accordingly, the objective of this research is to study the effects of hedonic and utilitarian content and the habitual use of social media on phubbing behavior. More specifically, the research question is, "Do hedonic and utilitarian content and habitual use of social media affect phubbing behavior?" To answer this research question, cross-sectional data (N = 220) from mobile Facebook users were collected through a psychometric survey. Facebook was chosen as the context of the study

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because it is the most popular mobile social media platform in both the United States and Europe (Ceci, 2022; Statcounter GlobalStats, 2022). The data were analyzed using partial least squares structural equation modeling (PLS-SEM) and a permutation test. The results highlight the differences between males and females with respect to the effects of hedonic and utilitarian content and the habitual use of social media on phubbing.

Previous research has mainly investigated the addictive use of mobile services, personal characteristics, and emotional strain as possible predictors of phubbing. This research contributes to the phubbing research by adopting a technological perspective on the possible antecedents of this phenomenon. In fact, this is the first study to empirically test the effects of IS content on phubbing behavior. Therefore, it contributes to theory by investigating previously unstudied relationships. The results of this study provide implications for the correlations between technological use patterns and phubbing behavior.

2. Phubbing

First listed in the *Macquarie Dictionary*, the term "phubbing" is a combination of the words "phone" and "snubbing" (Karadağ et al., 2015). Phubbing can be described as using and interacting with a mobile phone in a social setting instead of paying attention to communication partners or co-present interactions (Karadağ et al., 2015; Schneider & Hitzfeld, 2021). In other words, it is the act of snubbing companions in social settings by focusing on smartphones (Chotpitayasunondh & Douglas, 2016).

The ubiquitous nature of smartphones and its corollary—the ability to access online services anywhere and anytime—enable the use of mobile services both alone and in the company of others (Schneider & Hitzfeld, 2021). This essentially means that habitual use patterns are also carried over to these different contexts. As a result, phubbing can be seen in diverse social situations, whether romantic (e.g., Halpern & Katz, 2017; Roberts & David, 2016), professional (e.g., Roberts & David, 2017), domestic (e.g., Hong et al., 2019; Xie et al., 2019), or educational (e.g., Han et al., 2022; Vanden Abeele et al., 2019) in nature.

Phubbing has been conceptualized differently in previous research. Karadağ et al. (2015) conceptualized it as having two dimensions: communication disturbance and phone obsession. In comparison, Chotpitayasunondh and Douglas (2018) developed a four-factor Generic Scale of Phubbing, which comprises the constructs of nomophobia, interpersonal conflict, self-isolation, and problem acknowledgement. Studies have also developed and adopted scales with respect to phubbing in different relationships, such as partner phubbing and boss phubbing (Roberts & David, 2016, 2017). Moreover, frequency and duration have also been used to measure phubbing (e.g., Chotpitayasunondh & Douglas, 2016; Halpern & Katz, 2017).

Having proliferated in different contexts as an acceptable and normative feature of communication (Chotpitayasunondh & Douglas, 2016), phubbing can harm relationships, ongoing interactions, and psychological well-being. For instance, it was found that mobile messaging during offline conversations led to negative impression formation, as the phubber could be perceived as less polite and attentive (Vanden Abeele et al., 2016). The negative effects of phubbing on relationship satisfaction have also been shown by several studies (e.g., Krasnova et al., 2016; Roberts & David, 2016). In addition, boss phubbing was shown to lower trust in supervisors and indirectly decrease employee engagement (Roberts & David, 2017).

Research has also investigated pathological predictors (e.g., problematic smartphone and internet use), non-pathological predictors (e.g., self-control and fear of missing out), and personal characteristics (e.g., loneliness and self-esteem) as antecedents of phubbing behavior (Schneider & Hitzfeld, 2021). For instance, addictive use of mobile phones, the internet, and social media have been found to increase phubbing behavior (Chotpitayasunondh & Douglas, 2016; Karadağ et al., 2015). Regarding non-pathological predictors, it was found that fear of missing out had a positive effect (e.g., Chotpitayasunondh & Douglas, 2016; Schneider & Hitzfeld, 2021) and self-control had a negative effect (Chotpitayasunondh & Douglas, 2016) on phubbing. In terms of personal characteristics, neuroticism and conscientiousness were found to significantly predict phubbing (e.g., Erzen et al., 2021). However, no studies have investigated the technological affordances that may induce phubbing.

3. Hedonic and utilitarian content

Data or content incorporated in IS—in other words, the "information artifact," is one of the major components of IS artifacts (Iivari, 2017; Lee et al., 2015). Its role has gradually changed as IS continues to evolve. In traditional IS, the design of information artifacts occurs at the meta-level (e.g., entity–relationship diagrams, database schemas, or report layouts), yet its creation in the form of actual data occurs during the use process (Iivari, 2017). Additionally, the use and interaction with the information artifact happens in an on-demand fashion (i.e., click and view).

With the development of Web 2.0 and its corollary user-generated content, content has become one of the building blocks of social media (Kietzmann et al., 2011). Today, users are bombarded with data from various IS, such as social media and virtual collaboration tools. Notifications and presence features, or the "infinite scroll" inspired by the bottomless bowl experiment, are all pathways of this information bombardment. Furthermore, many technologies that employ artificial intelligence are useless without data. For example, machine learning algorithms employ our data to discover and learn patterns to make proper decisions with respect to their purpose.

In addition, content in contemporary technologies takes different forms; it can be both hedonic and utilitarian in nature. Hedonic content is the type of content that is inherently interesting to the user, and its consumption provides pleasurable experiences, such as enjoyment and playfulness. It can influence the user emotionally or in a multisensory manner and can awaken historic or fantasy imagery through reminders. Examples of hedonic content can be funny videos, memes, movies, or parody posts. In comparison, utilitarian content enables the completion of tasks and accomplishments. Its consumption is not an end in itself but is a path to achieving goals. Hence, the consumption of such content also depends on the degree of its usefulness. Examples of utilitarian content can be food recipes for a person who does not enjoy cooking, IKEA manuals for furniture assembly, or meeting reminders.

4. Habitual use

Habits are behavioral tendencies to repeat responses in steady supportive environments (Ouellette & Wood, 1998). They develop with repetition and practice in similar contexts (Aarts et al., 1998; Ouellette & Wood, 1998). Habitual behaviors are automatic and are activated and carried out efficiently, effortlessly, and unconsciously (Aarts et al., 1998). However, their activation happens in the existence of similar environmental cues—triggering stimuli—or a specific goal (e.g., taking the bike to ride to the university). Hence, they may also have a goal-directed type of automaticity (Aarts et al., 1998).

Regarding habit formation, satisfactory experiences improve the tendency to repeat the same course of action. On the contrary, dissatisfactory experiences decrease the probability of repeating the same practice and hence habit formation. The reason for this is that while satisfaction strengthens the link between the goal or environmental cue and action, dissatisfaction weakens the likelihood of continuing the same behavior and hence the possible formation of the association between a particular situation and choice. In addition, the frequency of cue–action activation increases the strength and accessibility of their mental association.

Accordingly, IS habits are defined as "the extent to which people tend to perform behaviors (use IS) automatically because of learning"

(Limayem et al., 2007, p. 709). IS habit formation occurs in four step cycles: trigger, action, variable reward, and investment (Eyal, 2014). Triggers, defined as behavior actuators (Eyal, 2014), can be both internal and external (Verplanken & Aarts, 1999). In essence, much continued IS use follows habitual use patterns in the presence of environmental cues without reasoned action or planned behavior, and these environmental cues can take different forms, such as the task to be performed, the mere presence of the technology itself at the device or feature level, or the mere sight of it (Guinea & Markus, 2009). Technology-initiated stimuli, such as push notifications to take certain actions (e.g., complete the daily practice on a language learning application), can be seen as external stimuli. Similar to habitual behavior in other contexts, IS habits also have antecedents, such as satisfaction, comprehensiveness of usage, and frequency of past behavior (Limayem et al., 2007; Turel, 2015; Turel & Serenko, 2012). In other words, IS habits form as a consequence of satisfactory repetitive behaviors in the past. Additionally, it was found that younger users are more liable to develop IS habits (Turel, 2015).

5. Research model and hypotheses

This research studied the effects of content and habitual IS use on phubbing behavior. More specifically, it investigated both the direct effects of hedonic and utilitarian content on phubbing and the indirect effects mediated through habitual social media use. Utilitarian content was conceptualized as the usefulness of the consumed content as perceived by the user, and hedonic content was conceptualized as the extent to which a user finds the consumed content enjoyable. Phubbing was studied in terms of its interpersonal conflict dimension, which was defined as the perceived discord between oneself and others emerging because of mobile phone use (Chotpitayasunondh & Douglas, 2018). The research model was designed based on the affordances perspective, which suggests that affordances implemented in a system lead to psychological outcomes, which further lead to behavioral outcomes (Koivisto & Hamari, 2019; Norman, 2013). The research model is presented in Fig. 1.

Hedonic content provides enjoyable experiences for users and can take different forms, such as funny comments, stories, icons, avatars, and videos. Utilitarian content is more informative and useful for different user tasks or objectives (Dumlao and Ha, 2013). Social media services, with their multipurpose nature and user-generated content, can bring together both hedonic and utilitarian content for users' consumption. The amount of content per type consumed by users depends on their past behaviors informed by factors such as recommender systems integrated in these services. Such personalized content presentations aim to increase user satisfaction so that they make prolonged use of the service. After all, satisfactory experiences increase the likelihood of repeating the same course of action because the action becomes more strongly linked with the initial hedonic or utilitarian pursuits (Aarts et al., 1998). Previous research has also found that user satisfaction with Twitter increases with hedonic and utilitarian tweet quality (Dumlao and Ha, 2013). Other research has shown the positive effects of affective feedback on perceived benefits in the context of a gamified exercise encouragement system (Hassan et al., 2019). In addition, studies have shown the positive effects of informational feedback and content relevance, which is an aspect of useful content, on continued-use intention (e.g., Hassan et al., 2019; Zhou et al., 2018). Notably, perceived benefits are a significant antecedent of satisfaction and continued-use intention, a route to habitual use formation (Aarts et al., 1998). Therefore, the following hypotheses were established:

H1a. Utilitarian content positively affects habitual use.

H2a. Hedonic content positively affects habitual use.

The importance of the information artifact—in other words, the content/data that an information system comprises—as one of the major components of IS artifacts (Iivari, 2017) has only increased over time. In fact, it is one of the major building blocks of social media services (Kietzmann et al., 2011). Today, it is strategically used by system designers to increase the time users spend on many IS, particulary social media. Temporarily available snaps and statuses, different forms of feedback (e.g., likes), swiping through content—a design inspired by the bottomless bowl experiment—rewards, and infotainment are all affordances that are highly habit forming, and all aim to increase social media use time (Ali et al., 2018; Andersson, 2018). Previous research has shown that hedonic and utilitarian content positively affect both continued-use intention and use intensity by increasing perceived benefits or promoting habitual use (Hassan et al., 2019; Köse, 2020; Zhou et al., 2018). Considering the ubiquitous nature of mobile services, the use of mobile services (e.g., social media) and content consumption can spill over to social settings as well. Consequently, hedonic and utilitarian content consumption can extend the use time of mobile services by providing pleasurable experiences or satisfaction, not only when one is alone but also in the company of others. Therefore, the following hypotheses were proposed:

H1b. Utilitarian content positively affects phubbing.

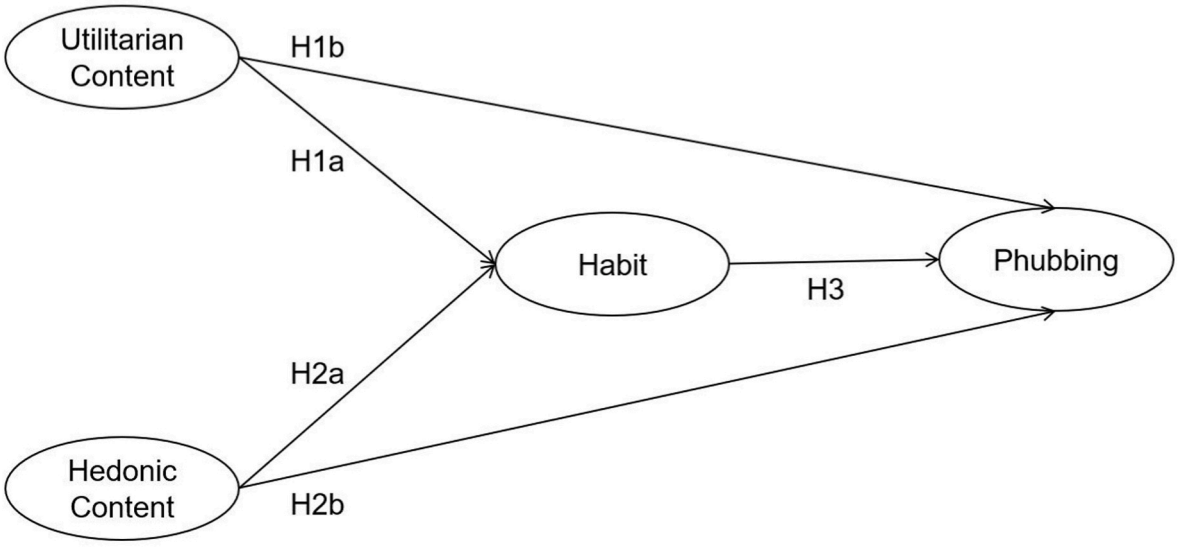

Fig. 1. The research model.

Table 1
Survey items.

Indicator	Survey Item	Loading	References
HCON1	The content on Facebook is enjoyable.	0.885	Köse (2020)
HCON2	The content on Facebook is pleasant.	0.928	
HCON3	The content on Facebook is fun.	0.721	
HCON4	The content on Facebook is exciting.	0.806	
UCON1	The content on Facebook is relevant.	0.770	Köse (2020)
UCON2	The content on Facebook is informative.	0.914	
UCON3	The content on Facebook is useful.	0.746	
HABIT1	Using Facebook has become automatic to me.	0.736	Bhattacherjee and Lin (2014) and Limayem et al. (2007)
HABIT2	Using Facebook is natural to me.	0.898	
HABIT3	I have a habit of using Facebook.	0.736	
PHUB1	People tell me that I interact with Facebook too much.	0.987	Chotpitayasunondh and Douglas (2018)
PHUB2	I get irritated if others ask me to get off Facebook and talk to them.	0.786	
PHUB3	I use Facebook even though I know it irritates others.	0.661	

H2b. Hedonic content positively affects phubbing.

Habitual behavior repeats in an automatic fashion without the allocation of much attention or deliberate reasoning in the presence of contextual cues (Ouellette & Wood, 1998). In the context of habitual IS use, these cues can be the task to be performed, the mere presence of the technology at the device or feature level, or its mere sight (Guinea & Markus, 2009). Hence, in a social setting, the sight of the mobile phone, or its felt presence in the pocket, can also trigger its use if such a habitual use pattern exists. Furthermore, habits have a numbing effect that reduces self-observation and judgmental processes, which results in reduced thinking about the system, consequences of its use, and stopping its use (Turel, 2015). Therefore, it is expected that when users engage with mobile IS habitually in a social setting, they may not notice that they are lowering the quality of their interactions and alienating their companions, let alone thinking about stopping the use of the mobile phone. Accordingly, the following hypothesis was established:

H3. Habitual use positively affects phubbing.

Previous research has shown differences between males and females in their interactions with and perceptions of technology (e.g., Venkatesh & Morris, 2000; Zhou et al., 2014). For instance, the effects of perceived benefits (i.e., utilitarian, hedonic and social benefits) were found to differ between males and females in different technology contexts (e.g., Venkatesh & Morris, 2000; Zhou et al., 2014). Gender differences are also present with respect to phubbing behavior (Chotpitayasunondh & Douglas, 2016; Karadağ et al., 2015; Xie et al., 2019). For example, it was found that social media addiction affected the phubbing behavior of females more than males (Karadağ et al., 2015), that being phubbed had a stronger effect on perceived social norms of phubbing for males than females (Chotpitayasunondh & Douglas, 2016), and that boys were affected more (e.g., affiliating with deviant peers and increased smartphone addiction) than girls by parent phubbing (Xie et al., 2019). Therefore, it is expected that there will be differences between males and females regarding the effects of content type on phubbing as well.

6. Methodology

6.1. Data

The data were collected via a cross-sectional survey. The survey items were adopted from previous research. Hedonic and utilitarian content items were adopted from Köse (2020), the habitual use items were adopted from Bhattacherjee and Lin (2014) and Limayem et al. (2007), and the items for phubbing were adopted from Chotpitayasunondh and Douglas (2018) using its interpersonal conflict dimension. All items except the ones used for phubbing were measured on a 7-point Likert scale ranging from strongly disagree to strongly agree. Phubbing items were measured on a frequency-based 7-point Likert scale (1 = almost never, 2 = very infrequently, 3 = somewhat infrequently, 4 = about half the time, 5 = somewhat frequently, 6 = very frequently, and 7 = almost always). The full item set is presented in Table 1.

The responses were collected via Prolific, a service that enables fast, reliable, and large-scale data collection by connecting researchers and participants worldwide (Prolific, 2022). The respondents were chosen from a pool of people who use Facebook as their most used social media service on their mobile devices. A total of 220 Facebook users participated in the survey. The respondents' demographic information can be seen in Table 2.

6.2. Validity, reliability, and overall fit

The data were analyzed via PLS-SEM using SmartPLS 4 software. The measurement model was assessed according to the guidelines for confirmatory and exploratory IS research using partial least squares (Benitez et al., 2020). The convergent validity of the constructs was assessed using composite reliability (CR), Cronbach's alpha (Alpha), and

Table 2
Demographic details of the sample: gender, age, and duration of daily Facebook use.

	Frequency	Percent		Frequency	Percent
Gender			Duration of daily use		
Female	134	60.91	0–5 min	3	1.36
Male	86	39.09	5–15 min	35	15.91
			15–30 min	37	16.82
Age group			31–60 min	47	21.36
18–24	1	0.45	1–2 h	55	25
25–34	60	27.27	2–3 h	25	11.36
35–44	58	26.36	More than 3 h	18	8.18
45–54	55	25			
55–64	28	12.73			
65–74	18	8.18			

Table 3
Convergent and discriminant validity.

	Alpha	CR	AVE	HABIT	HCON	PHUB	UCON
HABIT	0.838	0.845	0.630	0.793			
HCON	0.905	0.912	0.704	0.576	0.839		
PHUB	0.855	0.890	0.676	0.243	0.167	0.822	
UCON	0.851	0.863	0.662	0.495	0.788	0.223	0.813

HABIT = Habitual use, HCON = Hedonic content, PHUB = Phubbing, UCON = Utilitarian content, Alpha = Cronbach's alpha, CR = Composite reliability, AVE = Average variance extracted.

average variance extracted (AVE). According to the guidelines, CR values should be higher than 0.7 (Hair et al., 2019), the Alpha values should be higher than 0.7 (Kline, 2016), and AVE values should be higher than 0.5 (Fornell & Larcker, 1981; Hair et al., 2019). Discriminant validity was established by confirming that the heterotrait–monotrait ratio was lower than 0.85 (Benitez et al., 2020). Table 3 presents these assessment results, which indicate that convergent and discriminant validity were at acceptable level.

Since the dataset is cross-sectional, common method bias can threaten the validity of conclusions as a source of measurement error (Podsakoff et al., 2003). To prevent common method bias, procedural and statistical remedies were applied (Podsakoff et al., 2012). Procedurally, the measurement items of the same construct were located at least six items apart, and social desirability bias was reduced by informing the participants that their answers would remain anonymous and inviting them to be sincere in their answers. Statistically, a full collinearity test was conducted to validate that there was no variance inflation factor (VIF) value greater than 5 (Hair Jr. et al., 2016). The results showed that all the VIF values in the inner and outer models were lower than 5, so it was concluded that the model was free from common method bias.

The overall fit of the model was evaluated by checking the standardized root mean squared residual (SRMR) values, which should be below the 0.080 threshold (Benitez et al., 2020). The SRMR value was 0.053, which is at an acceptable level.

6.3. Measurement invariance of the composite models

To compare the results between males and females, measurement invariance should be established first. This can ensure that group differences do not stem from the distinctive content and/or meanings of the latent variables across groups (Hair Jr. et al., 2016). One way to demonstrate measurement invariance is by using the measurement invariance of composite models (MICOM) procedure (Henseler et al., 2016). MICOM involves three steps. In the first step, configural invariance is checked through a qualitative assessment of identical indicators per measurement model, identical data treatment, and identical algorithm settings or optimization criteria. In the second step, the compositional invariance (i.e., equal indicator weights) is assessed. Lastly, in the third step, the equality of composites' mean values and variances are assessed (Hair Jr. et al., 2016; Henseler et al., 2016). The establishment of the first and second steps indicates partial measurement invariance, which is enough to appropriately compare the standardized path coefficients between groups (Henseler et al., 2016). If the third step is also established, in addition to partial measurement invariance, then full measurement invariance can be said to have been established.

The MICOM procedure established partial measurement invariance. The configural invariance (first step) was established because all data were measured and treated in the same manner. Table 4 shows that compositional invariance (second step) was also established.

7. Results

7.1. Path model results for the full data

Fig. 2 presents the results of the consistent PLS-SEM algorithm analysis for the full dataset. The research model explained 8% of phubbing behavior and 33.6% of habitual use in the context of Facebook. Both utilitarian and hedonic content had a significant total positive effect on the habitual use of Facebook ($\beta = 0.108$; $p < 0.001$; $\beta = 0.491$; $p < 0.001$). Therefore, H1a and H2a were supported. Habitual use had a significant positive effect on phubbing ($\beta = 0.211$; $p < 0.001$). Hence, H3 was supported. Utilitarian content showed a significant positive direct effect on phubbing ($\beta = 0.220$; $p < 0.001$); therefore, H1b was supported. Hedonic content had a significant negative effect on phubbing; therefore, H2b was rejected. Only the effect size of habitual use on phubbing ($f2 = 0.032$) and the effect size of hedonic content on habitual use ($f2 = 0.138$) were at substantial levels (Hair Jr. et al., 2016).

7.2. Differences between males and females

Fig. 3 presents the results of the consistent permutation multigroup analysis for the male and female samples. The research model explained 8.4% and 14.2% of phubbing behavior and 49.5% and 24.3% of habitual use for the male and female samples, respectively, in the context of Facebook. Both utilitarian and hedonic content had a significant total positive effect on the habitual use of Facebook for the female ($\beta = 0.061$; $p < 0.001$; $\beta = 0.444$; $p < 0.001$) and male samples ($\beta = 0.125$; $p < 0.001$; $\beta = 0.601$; $p < 0.001$). Therefore, H1a and H2a were supported for both samples. Habitual use had a significant positive and significant negative effect on phubbing ($\beta = 0.378$; $p < 0.001$; $\beta = -0.059$; $p < 0.001$) for the female and male samples, respectively. Hence, H3 was supported for the female sample, but it was rejected for the male sample. Utilitarian content showed a significant positive direct effect on phubbing ($\beta = 0.238$; $p < 0.001$; $\beta = 0.219$; $p < 0.001$) for both the male and female samples, respectively; therefore, H1b was supported for both samples. Hedonic content had a significant positive and significant negative effect on phubbing ($\beta = 0.102$; $p < 0.001$; $\beta = -0.257$; $p < 0.001$) for the male and female samples, respectively; therefore, H2b was supported for the male sample, and it was rejected for the female sample.

To compare the male and female groups, a permutation test was conducted. The permutation test is a non-parametric approach that is more conservative in terms of rendering differences significant (Hair Jr. et al., 2016). Additionally, to ensure that the permutation test is performed accurately, it is necessary for there to be no large differences in group size (Hair Jr. et al., 2016). In this study, there was a difference in the sizes of the male and female groups; however, the female group was not more than double the size of the male group (Cheah et al., 2020). Therefore, it was believed that the difference in group size would not create a problem in the results of the permutation test. The permutation test results are presented in Table 5. The results indicated a significant difference between male and female respondents regarding the effects of habitual use on phubbing (H3). Otherwise, no significant differences were found for hypotheses H1a, H1b, H2a, or H2b between males and females. The results of the permutation test are in line with the differences seen in the path coefficients of the two samples.

The results also showed that the habitual use mediated the effects of hedonic and utilitarian content on phubbing. However, this effect differed between males and females. For males, habitual use acted as a suppressor variable that decreased the effects of hedonic and utilitarian content on phubbing. Accordingly, the total effects of utilitarian and hedonic content on phubbing were significantly positive ($\beta = 0.231$; $p < 0.001$; $\beta = 0.066$; $p < 0.001$ respectively). For females, habitual use had a complementary mediation effect with regard to utilitarian content, and it had a competitive mediation effect with regard to hedonic content. Accordingly, the total effect of utilitarian content on phubbing was significantly positive ($\beta = 0.242$; $p < 0.001$), and the total effect of hedonic content on phubbing was significantly negative ($\beta = -0.090$; p

Table 4
Compositional invariance.

Construct	Original correlation	Correlation permutation mean	5.0%	Permutation p value
HABIT	0.999	0.998	0.993	0.478
HCON	0.999	0.999	0.995	0.334
PHUB	0.993	0.991	0.978	0.332
UCON	0.997	0.998	0.992	0.272

HABIT = Habitual use, HCON = Hedonic content, PHUB = Phubbing, UCON = Utilitarian content.

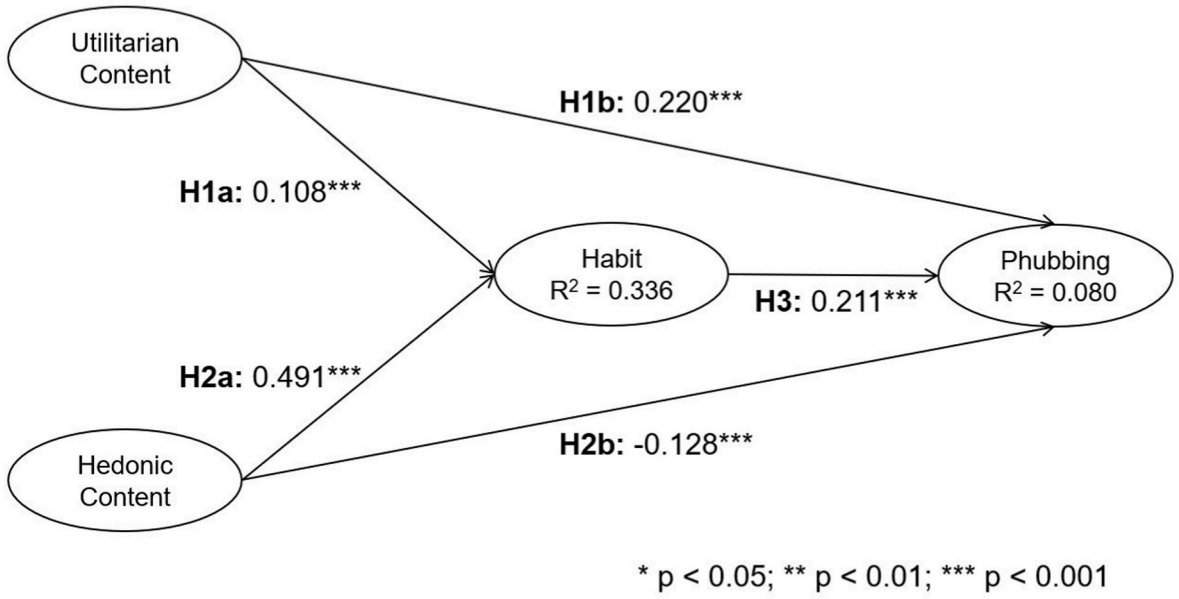

Fig. 2. Structural model results for the full data set (total effects are shown for the content type effects on habitual use).

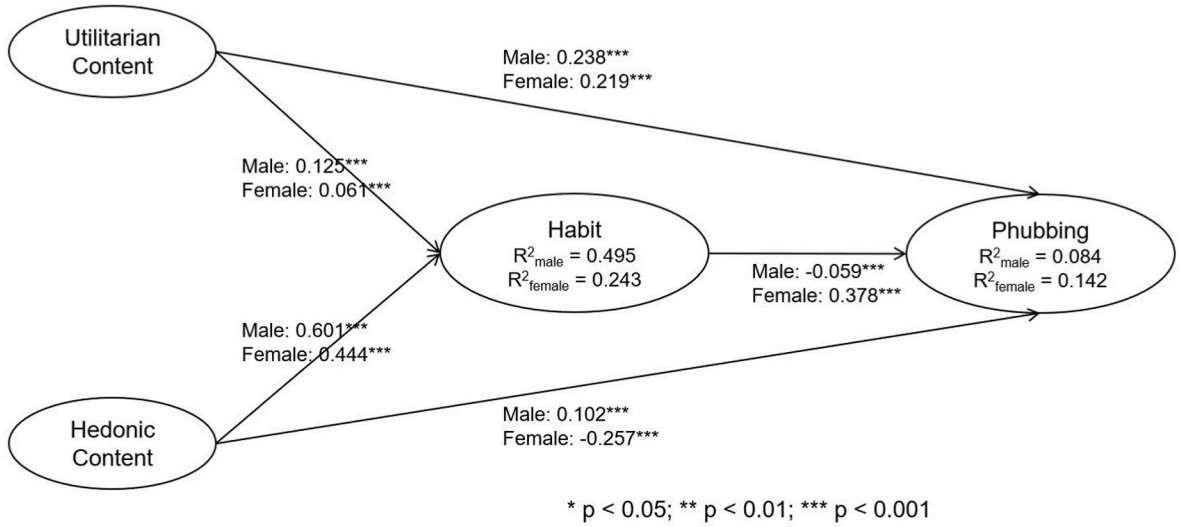

Fig. 3. Structural model results for the male and female samples (total effects are shown for the content type effects on habitual use).

Table 5
Permutation test results.

Structural paths	Original (Female)	Original (Male)	Original difference	Permutation mean difference	2.5%	97.5%	Permutation p value
HABIT - > PHUB	0.295	−0.034	0.329	−0.001	−0.299	0.297	0.034
HCON - > HABIT	0.357	0.512	−0.154	0.004	−0.354	0.400	0.436
HCON - > PHUB	−0.136	0.111	−0.247	−0.003	−0.346	0.345	0.175
UCON - > HABIT	0.096	0.158	−0.062	−0.006	−0.444	0.397	0.746
UCON - > PHUB	0.142	0.195	−0.054	0.000	−0.312	0.356	0.753

< 0.001). Table 6 presents the mediation effects of habitual use.

8. Discussion

To the authors' knowledge, this research is the first to study the technological antecedents of phubbing. It focused on the effects of content type and habitual use on phubbing behavior. More specifically, the effects of hedonic and utilitarian content on habitual use and phubbing and the effects of habitual use on phubbing were analyzed via PLS-SEM. The differences between males and females were also investigated using a permutation test. The context of the study was social media services, specifically Facebook. Overall, the results highlight the differences between males and females regarding the effects of content on phubbing behavior. This research offers several theoretical and practical contributions, particularly to the understanding of the phubbing phenomenon and its technological antecedents.

Regarding the effects of utilitarian and hedonic content on habitual use, for all samples (full, male, and female), hedonic content showed

Table 6
Mediation effects of habitual use.

Female							
	Path coef.	P value	Total effect	P value		Specific indirect effect	P value
HABIT - > PHUB	0.378	0.000	0.378	0.000	HCON - > HABIT - > PHUB	0.168	0.000
HCON - > HABIT	0.444	0.000	0.444	0.000	UCON - > HABIT - > PHUB	0.023	0.000
HCON - > PHUB	−0.257	0.000	−0.090	0.000			
UCON - > HABIT	0.061	0.000	0.061	0.000			
UCON - > PHUB	0.219	0.000	0.242	0.000			
Male							
	Path coef.	**P value**	**Total effect**	**P value**		**Specific indirect effect**	**P value**
HABIT - > PHUB	−0.059	0.000	−0.059	0.000	HCON - > HABIT - > PHUB	−0.036	0.000
HCON - > HABIT	0.601	0.080	0.601	0.000	UCON - > HABIT - > PHUB	−0.007	0.000
HCON - > PHUB	0.102	0.000	0.066	0.000			
UCON - > HABIT	0.125	0.711	0.125	0.000			
UCON - > PHUB	0.238	0.000	0.231	0.000			

HABIT = Habitual use, HCON = Hedonic content, PHUB = Phubbing, UCON = Utilitarian content, Path coef. = Path coefficient.

substantial effects on the habitual use of Facebook, while utilitarian content's significant effects on habitual use had unsubstantial effect sizes. This difference in the effects of hedonic and utilitarian content is in line with the findings of previous research (e.g., Köse, 2020). This may be explained by the fact that hedonic content provides more pleasurable experiences than utilitarian content, which leads users to repeat the consumption of similar (i.e., hedonic) content. As a result of this repetition, they form stronger associations between content consumption, their initial goal, and related contextual cues (i.e., environmental setting) (Aarts et al., 1998; Ouellette & Wood, 1998).

A significant difference was found between males and females with respect to the effect of habitual use on phubbing. For females, habitual use showed a significant positive effect on phubbing; in addition, the effect size of habitual use and the explained variance of phubbing were at substantial level. For the male sample, habitual use showed a significant negative effect on phubbing; however, its effect size was not substantial. The significant positive effect seen in the female sample can be explained by habitual use's positive effect on use intensity and usage behavior (e.g., Bhattacherjee & Lin, 2014; Köse, 2020; Limayem & Hirt, 2003). Besides, as discussed before, users may not be able to self-observe when they are acting in an automated, unconscious manner, as in the case of habitual behavior. The difference between males and females in relation to the effects of habitual use on phubbing is in line with previous research that found that social media addiction affected the phubbing behavior of females more than males (Karadağ et al., 2015). This difference may also be explained by males' higher receptivity to social norms against phubbing in comparison to females (Chotpitayasunondh & Douglas, 2016).

For males, consumed content mainly directly affects phubbing behavior. In fact, habitual use has a suppressing variable effect. In other words, habitual use was found to decrease the magnitude of the total effect of consumed content on phubbing in males. That said, utilitarian content had a more prominent effect than hedonic content on phubbing in males. This result is in line with previous research showing the prominence of utilitarian value for males in the adoption and use of technology (e.g., Venkatesh & Morris, 2000; Zhou et al., 2014). Overall, these results indicate that males engage in phubbing mainly when they consume utilitarian content in a conscious manner.

For females, utilitarian content positively affects phubbing behavior both directly and indirectly, with habitual use showing complementary mediation. This means that habitual consumption of utilitarian content increases phubbing behavior. In comparison, hedonic content consumption was found to have a negative effect on phubbing behavior. However, when this consumption becomes habitual, it positively affects phubbing behavior. This means that females engage in phubbing behavior less if they consume hedonic content; however, when this consumption takes a habitual form, it induces phubbing. Finally, the total effect of hedonic content on phubbing was negative, and its absolute value was lower than the total effect of utilitarian content.

The prominent and positive effect of utilitarian content on phubbing indicates that the more users perceive Facebook content to be informative or instrumental to their goals, the more likely that their use of Facebook will create interpersonal conflicts. In other words, the more people use Facebook for its useful content, the more they pay attention to this social media service in a social setting.

8.1. Implications

Overall, this study has both theoretical and practical contributions and implications. From a theoretical perspective, this is the first study to investigate the technological antecedents of phubbing. As such, it is a first step to fill a significant research gap in the phubbing literature, where previous research has only focused on problematic use, technology-related norms and experiences (e.g., fear of missing out and pervasive connectedness), smartphone use, or personality traits as antecedents of phubbing. Furthermore, this study built a technological affordance–psychological outcome–behavioral outcome model based on the affordances perspective, and it showed that technological affordances can induce negative outcomes (i.e., phubbing) in the social and communicational sphere as well. It provided a novel understanding of how content consumed on social media can affect phubbing, taking into account gender differences.

From a practical perspective, technology managers and designers can consider tailoring displayed content in a way that will not induce phubbing. One way to do this is to reduce the amount of hedonic content displayed to female consumers while they are in the company of others. It is clear that the effects of content consumption on phubbing differ between males and females. Taking these differences into account, partners, friends, or other types of companions in social settings should avoid making quick judgments about others' phone use (i.e., Facebook use in this context). In particular, males' content consumption on Facebook, which may seem like phubbing, can actually stem from the consumption of useful, informative content that is necessary for work, study, or other types of tasks and duties. In that respect, informing people in their company beforehand that the use of social media (e.g., Facebook) is necessary for, for example, work can reduce the perceptions of being phubbed.

These results also have implications for other types of stakeholders, such as parents/caregivers, school administrators, and public policy analysts. Considering the negative effects of parent phubbing on children (e.g., Xie et al., 2019), parents may consider paying attention to what kind of content they consume beside their children. Overall, for all parents, a clear delineation between work, study, and task time done via mobile phones and the time spared for children might help reduce the

amount of phubbing stemming from utilitarian content consumption. For female parents, avoiding the consumption of hedonic content might reduce the amount of phubbing by preventing the activation of habitual social media use. This can be done by developing strategies to reduce the use of mobile social media, such as putting the mobile phone away in the presence of kids or using it in certain hours when kids are away. School administrators should consider educating pupils regarding content consumption on social media. In addition to distracting them from schoolwork, social media can also harm relationships between teenagers (e.g., Common Sense Media, 2018). In addition, it can lead to other types of harm, such as body image dissatisfaction (e.g., Mills et al., 2018) and fear of missing out (e.g., Hunt et al., 2018). Hence, early education about social media content consumption and its possible harms and side effects is an absolute must. With respect to the results of the current study, educators may instruct pupils regarding hedonic content consumption and limit mobile phone (or social media) use for in-class activities (e.g., to prevent utilitarian content consumption to do in-class work). Likewise, public policy analysts should consider public education regarding phubbing as a widespread phenomenon. Such education should cover both the antecedents (e.g., how to consume social media content) and consequences of phubbing (e.g., harm to relationships between partners, child development, and employee trust).

8.2. Limitations and future research

As with all research, this study has certain limitations that open avenues for future research. First, the data comprised only Facebook users; therefore, the results may differ in other types of social media. Additionally, it is predicted that the effects of hedonic and utilitarian content will vary with different social media services, such as Instagram, LinkedIn, and Twitter. Moreover, the effects of content type may vary with other types of mobile services (e.g., e-mail and mobile news). Therefore, the study should be replicated for other social media and mobile services.

Second, the fact that the majority of the survey participants were female restricts the generalizability of the results of the full data analysis and may have affected the data analysis's path coefficients (Fig. 2). Had there been similar numbers of male and female respondents, it is predicted that the effect sizes of both hedonic and utilitarian content on habitual use would be higher and that the effect of habitual use on phubbing would be smaller. However, since there were significant differences between the male and female samples in the results of the research model, it is more important to take into account the results corresponding to the separate samples. Accordingly, future research could study the technological antecedents of phubbing with a more balanced sample of male and female respondents.

Third, phubbing was measured using only one of its facets: interpersonal conflict. However, prior research has studied it in a multidimensional manner considering nomophobia, self-isolation, problem acknowledgement (Chotpitayasunondh & Douglas, 2018) or communication disturbance and phone obsession (Karadağ et al., 2015). This may have affected the findings of the study. However, interpersonal conflict probably reflects the worst-case scenario of phubbing: When others complain about a certain behavior, it can be said that the behavior has turned into an explicit and recurring problem. Therefore, measuring phubbing behavior by taking into account its other aspects would increase the levels of the effects (i.e., path coefficients) studied in the research model. To fill this gap, future research should investigate the effects of technological antecedents (e.g., consumed content) by taking into account other defined dimensions of phubbing.

Fourth, users' conceptions of a specific mobile service can also affect their content consumption. Users implicitly classify information systems according to how and why they use the system (Köse et al., 2019). This is particularly the case for social media services that can be adapted to different uses with their feature-rich nature (Tarafdar et al., 2020). For instance, some may use Facebook for its utility in providing information about nearby events, and some may use it for the fun content (e.g., cat videos) it provides. Therefore, user conception can influence the effects of content on habitual use and phubbing behavior. Future research could investigate its moderating effects.

Future research could also extend this study by examining the effects of other types of technological antecedents. For instance, investigating the effects of different types of content or notifications as instigators of phubbing behavior can shed light on the dynamics between mobile and face-to-face interactions. In addition, studies can look into the effectiveness of features such as "do not disturb" in reducing phubbing. Another way to extend this research is to study the effects of technological antecedents in different types of relationships (e.g., between romantic partners, parent and child, boss and subordinate, or teacher and student). Furthermore, these studies should include other types of user characteristics (e.g., age) as moderators of the effects.

9. Conclusion

Phubbing has become an acceptable and normative feature of communication; however, as a recent phenomenon, little is known about its causes, despite its negative effects on different types of relationships. This study attempted to provide a technological perspective on the antecedents of phubbing behavior. As such, it is the first study to investigate the technological antecedents of phubbing. More specifically, it investigated the effects of habitual use and hedonic and utilitarian content on phubbing behavior. The results showed that the effect of habitual use on phubbing differed between males and females; it positively affected phubbing in females, yet it did not have a substantial effect in males. In addition, utilitarian content had a more prominent effect on phubbing than hedonic content. Overall, the findings indicate that users' content consumption and technological use habits can also play a determining role in their phubbing behavior, and their effects can spill over into their face-to-face interactions.

Credit author statement

This article is a single-author study. Therefore, all the contribution roles as described in the Contributor Roles Taxonomy (conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, software, supervision, validation, visualization, writing – original draft, writing – review & editing) were carried out by Dr. Dicle Berfin Köse – the author of the study.

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Informed consent

The respondents agreed to participate in the study and gave their consent for the processing of the data they provide and its use in research and publications via informed consent.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

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