Research article

A descriptive literature review of phubbing behaviors

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ABSTRACT

The practice of phubbing has become an emerging phenomenon of worldwide interest to researchers. The cause is due to the fact that smartphones are ubiquitous and are often used in co-present interactions. This behavior is generally considered inappropriate and is called "phubbing". Phubbing, as described by Chotpitayasunondh and Douglas (2018), is the act of snubbing someone in a social setting by looking at one's phone instead of paying attention to the other person. The aim of this article is to provide an overview of research studies on phubbing through a review of the current literature. To do this, a search was carried out in an international database, finding 84 relevant articles in English that appeared in peer-reviewed journals published between 2012, the year in which the term 'phubbing' appears, and January 2020. The review covers the main fields of research studies on phubbing behaviors. Likewise, the results of the study show the distribution of published articles on phubbing by year that detail the type of study and the methodological approach and, finally, the research journals that have published articles on phubbing. The results of this review are expected to stimulate and guide future research in this field.

1. Introduction

The creation of personal devices, known as smartphones, has facilitated human interactions and expanded the field of communication technology. Smartphones have multiple benefits, giving easy access to communication and allowing people to connect with friends and family throughout the day and anywhere (Anshari et al., 2016). Also, smartphones can provide entertainment (Zhang et al., 2014) and online games (Kurt et al., 2018; Mérelle et al., 2017). However, several researchers (Bipeta et al., 2015; Estévez et al., 2017) have become increasingly concerned about the adverse effects of smartphone on the mental and physical health of users and the quality of their social interactions with other people.

The studies by Savci and Aysan (2017) found that the group most susceptible to smartphone or Internet addiction are young people and teenagers; hence, research has focused on studying young people to the exclusion of other age groups. However, more recently, several studies (Elhai et al., 2017; Wolniewicz et al., 2018) indicate that adults have reported their excessive use of their smartphones, worrying researchers about the possible consequences of this excessive use of smartphones. For instance, they can be life-threatening if used when walking in public

areas or when driving, as users can ignore their surroundings by focusing on the screen of their smartphone (Karadağ et al., 2016).

Moreover, it has been found that the excessive use of smartphones while accompanied by other people has negative social consequences for users. So much so that this ignoring of other people in favor of using one's smartphone is so significant that this behavior has given rise to a new concept known as 'phubbing'. Wolf (2014, p.2) define phubbing as the "act of snubbing someone in a social environment by looking at his phone instead of paying attention to the person". Such behaviour has negative consequences on interpersonal communication, to the detriment of the satisfaction of relationships and feelings of personal well-being (Roberts and David, 2016). Based on best knowledge, few studies examined phubbing, since it is a relatively recent phenomenon, little is known about the causes of phubbing behavior and "how it has become an acceptable or a normative feature of modern communication" (Chotpitayasunondh and Douglas, 2016, p .9).

To carry out this study, a review of the descriptive literature is conducted, guiding it through five research questions and by undertaking a search in several databases using descriptors and selecting the documents that include phubbing themes in its contents. The study results of the literature review classify the most published topics on phubbing, and a

set of graphics is generated (e.g. journal's name, publications year, etc.) that show the different methodologies and designs of the researchers applied to their studies on phubbing.

2. Literature review

Along with the advancement of smartphones, 'phubbing' emerged in Australia in 2007 (Nazir and Pişkin, 2016) also making an appearance in an advertising campaign in the Macquarie Dictionary. In May 2012, an advertising agency in Melbourne launched a campaign to curb this behavior and invited several lexicographers, authors and poets to create a new word to describe it. Hence the word 'phubbing' derived from the word "telephone" and "snubbing" (Karadağ et al., 2015). Subsequently, the term appeared in the media worldwide and was popularized by the "Stop Phubbing" campaign created by McCann (Uğur and Koc, 2015).

Table 1 shows the various definitions of phubbing offered by different authors from the early years until January 2020.

Phubbing is a concept with multiple dynamics (Karadağ et al., 2015, p.60). Phubbing reduces the quality of social interactions between people in society as people who demonstrate this behavior can present as disrespectful to people around them, indicating that they wish to avoid interpersonal communication or they are not aware of or interested in their environment (Anshari et al., 2016). Furthermore, phubbing can also occur at any place or time, including during meals, meetings, conferences or social gatherings with friends and family (Nazir and Pişkin, 2016). Consequently, due to the structure of smartphones, phubbing is a disturbance that is at the intersection of many addictions (Karadağ et al., 2015).

Because the concept of phubbing is a relatively recent one, the research and literature available are very limited and these behaviors have not yet established their own research space. Hence, it is important to seek out all available information in order to ascertain the actual determinants of phubbing. Since phubbing has been researched in different contexts including communication and psychology, the purpose of this literature review is to locate published articles related to phubbing, and in so doing to help researchers obtain information of interest in regard to this social phenomenon.

3. Research methodology

The aim of this literature review is to present an overview of phubbing behaviors, which is an emerging research area, to inform future research on this topic. This is done by examining the literature of each article published on topics related to phubbing to categorize them. The review will also give insights into the methodological approaches and research designs used by previous researchers. The techniques and procedures used to answer the research questions in this study are also discussed.

The following research questions guided this literature review:

(*RQ.1*) What topics are related to phubbing in the current research? (*Content*)
(*RQ.2*) How have phubbing behaviors been researched? (*Methodology*)
(*RQ.3*) What instruments have been designed for the detection of phubbing behaviours? (*Instruments*)
(*RQ.4*) Which journals have published articles on phubbing, and at which times?
(*Publication years and publication journals*)
(*RQ.5*) What are the main research fields in which the scientific community has carried out, or intends to carry out, studies on phubbing? (*Research fields*)

Given the lack of existing research on phubbing a descriptive approach was considered to be the most appropriate method for this literature review. This literature review is structured following study "Conducting research literature review" by Fink (2019) as a systematic, explicit and reproducible method to identify, evaluate and synthesize the existing body of complete and registered work produced by researchers, academics and professionals. The research reviewed is derived from studies focused from the perspective of health, education, psychology and social services, which based their conclusions on the original work of academics and researchers.

3.1. Scope of the literature search

In the first step of this review, a search for the relevant literature was conducted online using descriptors and the keywords "*phubbing*", "*smartphone*" and "*smartphone addiction*". However, the publication channels are still dispersed in the review of the literature on phubbing behaviors, since this is a recent phenomenon that surfaced only five years ago and is yet to appear in any Thesaurus (http://vocabularies.unesco.org/browser/thesaurus/en/).

The main objective of this phase was to conduct an online search of main bibliographic or article databases. For this literature review on

Table 1. Definitions of phubbing behavior. Prepared by the author(s).

Definitions of phubbing	Author(s) and year publication
"Phubbing can be described as an individual looking at his or her mobile phone during a conversation with other individuals, dealing with the mobile phone and escaping from interpersonal communication" (p.60).	Karadağ et al. (2015)
"Phubbing is the action of ignoring someone or multiple people during social events and using smartphones, to check or use Facebook, WhatsApp or other social media applications" (p.40).	Nazir and Pişkin (2016)
"Phubbing is the act when mobile devices lead people to ignore the ones beside them, and so cut the interpersonal communication" (p.364).	Cizmeci (2017)
"Phubbing is a kind of social exclusion and interpersonal neglect and is used to indicate the interruptions in social relationships caused by mobile phone usage" (p. 207).	Roberts and David (2017)
"Phubbing is the act of snubbing someone in a social setting by looking at your smartphone instead of paying attention" (p.304).	Chotpitayasunondh and Douglas (2018a, b)
"Phubbing is the act of checking your smartphone in the middle of a real-life conversation with someone else and escaping from interpersonal communication" (p.1).	Balta et al. (2018)
"Phubbing is the act of using a smartphone in a social setting of two or more people and interacting with the phone rather than with the other person or people present" (p.449).	Blanca and Bendayan (2018)
"Phubbing is the act when one person suddenly turns their gaze downwards and 'disappears' into their smartphone in the middle of a social interaction" (p.2).	Aagaard (2019)
"Phubbing refers to an individual giving more attention to their mobile phone when in face-to-face communication with another individual" (p.1).	Çikrikci et al. (2019)
"Phubbing refers to adverse behavior that occurs in social situations when individuals maintain their focus on their mobile phones at the expense of a reduced focus on the interlocutor who may feel ignored or snubbed" (p.7).	Kaczmarek et al. (2019).
"Phubbing means ignoring communication partners in co-present interactions by focusing on one's mobile phone" (p.8).	Schneider and Hitzfeld. (2019)

phubbing behaviors, the following databases are used: ProQuest (ABI/INFORM), ERIC, Scopus, Google Scholar and ScienceDirect (Elsevier). One hundred forty peer-reviewed research articles were examined.

An information collection form was created to organize the literature analysis under the following headings:

1. Bibliographic references and definitions of phubbing
2. Topics related to phubbing.
3. Number of articles published per year.
4. Distribution of articles by journals.
5. Methodological approach, type and design of studies.

3.2. Filtering process

The steps in the filtering process were adopted from Roehrs et al. (2017) removing impurities from search results. After filtering by title and summary, excluding those that were irrelevant to the research topic, duplicate articles were removed, and the full text was then filtered.

The steps followed for the search and analysis of articles comprised:

a. Establishment of exclusion and inclusion criteria (see Table 2);
b. Searching for and locating relevant articles;
c. Accessing texts for reading, review and textual copying of data according to the literature analysis headings in the collection form; and
d. Analyzing data to understand text and identify key ideas.

The initial literature review search identified 140 articles. Of these, 41 manuscripts were removed, since they were not published in English, were not peer reviewed, did not specify the names of the authors o were doctoral theses.

The remaining 99 articles were filtered to identify those that dealt exclusively with the phubbing phenomenon; 15 articles that did not focus on phubbing were removed. This round of filtering excluded articles that did not address the phenomenon of phubbing behaviors in general, but simply mentioned phubbing along with other phenomena of technology addiction. This phase was the most complex and time-consuming as all articles had to be read in their entirety in order to complete the filtering tasks. The perusal of abstracts and full texts also allowed us to exclude news articles that lacked references. In total, 56 articles were discarded in the filtering process.

In the third and final phase of data filtering, the 84 articles were read to obtain the necessary knowledge and results to assist in answering the research questions (see Figure 1).

3.3. Classification scheme

In this phase, coding was done to group and then categorize the key themes in the 84 articles retained for review after the filtering process, according to their thematic similarity.

The distribution of codes in different categories, and their subsequent analysis, was completed using a qualitative analysis software called ATLAS.ti. Following Friese (2019), this software allows information to be divided into multiple categories which are then analyzed. At the same time, to offer a visual representation of the codes obtained, the software can create a cloud showing the frequency of codes, with the size of the

code words indicating the frequency of their appearance: frequently occurring code words are large, while less frequent ones are small. ATLAS.ti was used for all data processing as well as the organization and presentation of the data analysis in figures, tables and graphs.

Categories were established inductively according to the topics that appeared during the coding process. Once coding was completed, five categories were identified for the phubbing dimension: Psychological, Technological, Communicational, Social and Cultural. Each category or research field is described in the results section.

4. Findings

In the following sections, in order to answer the research questions, the articles were analyzed to discover the main topics in the field of phubbing research (see section 4.1), answering the first research question of this study. In addition, the types of publications are analyzed according to the methodology and the instruments used (see section 4.2) to answer the second and third research questions. Also, the distribution of articles published by year and by research journal (see section 4.3) is determined in response to the fourth research question. Finally, the main research fields in which the scientific community studies the phenomenon of phubbing are detailed as the fifth research question (see section 4.4).

4.1. Main topics in the field of study

The qualitative analysis to classify the topics that have been published about phubbing was completed using ATLAS.ti software, and a word cloud was generated. A "word cloud" is an image that represents a range of words used in a selected document, including codes or quotations, in the form of a cloud. These words are presented in different sizes depending on how often they are used in the text, with the largest words being used the most frequently (Friese, 2019).

What topics are related to phubbing in the current research? (RQ.1)

Figure 2 below depicts the range of topics that have appeared in articles on phubbing. Previously, researchers have frequently focused on studying phubbing in relation to addiction to smartphones, the Internet, and social media. Studies on the forms of communication regarding this phenomenon have focused on satisfaction in personal relationships since the appearance of these behaviors predominate. Additionally, they highlighted studies related to social networks, FoMO (Fear of Missing Out), the problematic use of devices and variables such as loneliness, attention, neuroticism, jealousy and boredom linked to phubbing. Other studies are also focused on studying the behavior of users, personality, relationships, well-being, depression, social interaction, dependence, assertiveness, passivity, exhaustion, narcissism and kindness, among others. in relation to phubbing.

The number of codes and categories resulting from the filtering process are shown in Table 3 below.

The "psychological category" and the "technological category" clearly stand out as the most-published areas of research in relation to phubbing, with a total of 82 codes from the field of psychology and 85 codes from the area of technologies. These are followed by the "communicative
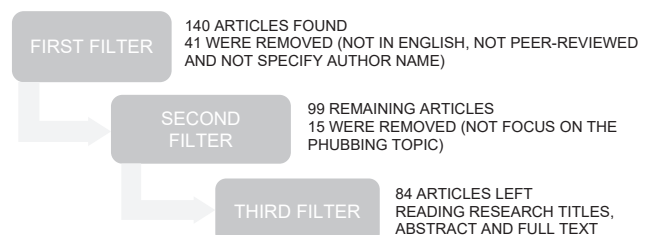
Table 2. Inclusion and exclusion criteria for the filtering process. Prepared by the author(s).

Criteria	Value
Year	Entered between 2012 and 2020
Type of publication	Research article
Methodology and design, participants, and results	As it appears in the article
Language	English

140 ARTICLES FOUND
41 WERE REMOVED (NOT IN ENGLISH, NOT PEER-REVIEWED AND NOT SPECIFY AUTHOR NAME)

99 REMAINING ARTICLES
15 WERE REMOVED (NOT FOCUS ON THE PHUBBING TOPIC)

84 ARTICLES LEFT
READING RESEARCH TITLES, ABSTRACT AND FULL TEXT

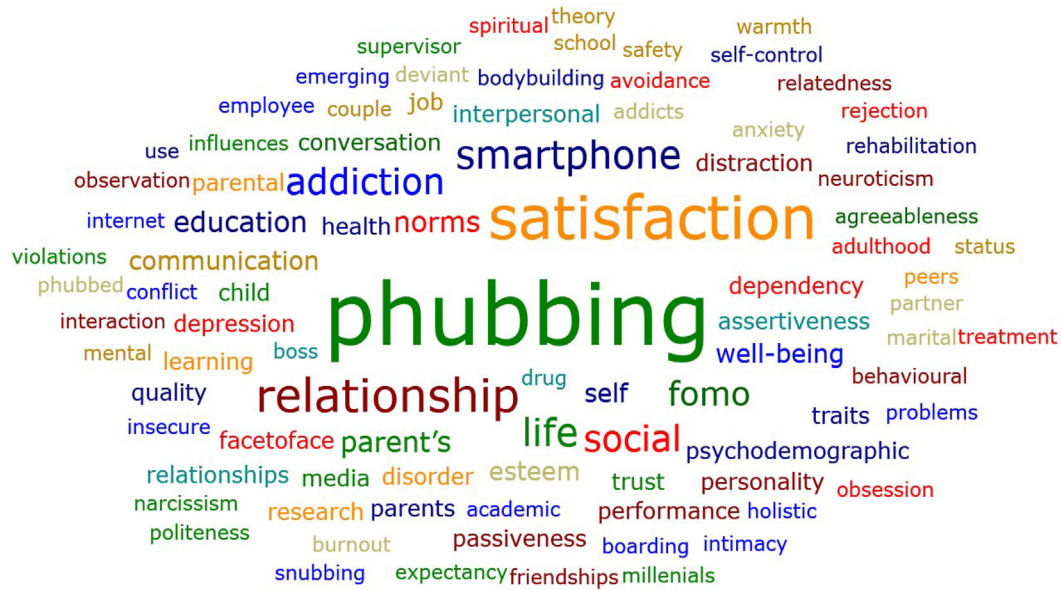**Figure 1.** Filtering process. Prepared by the author(s).

Figure 2. Word cloud about the topics published in relation to phubbing. Source: ATLAS.ti.

Table 3. Categories and codes for phubbing topics. Prepared by the author(s).

Dimension	Number of codes by dimension	Categories	Number of codes by categories	Total of codes by dimension
Phubbing	116	Psychology	82	237
		Technology	85	
		Communication	29	
		Social	22	
		Cultural	19	

category" (29 codes), the "social category" (22 codes) and the "cultural category" (19 codes).

4.2. Distribution of publications by type of study and methodological approach

It is essential to ascertain the type of publication and the methodology used in phubbing research, to give an overview of each study and to determine whether the methodologies used have shortcomings that could be addressed in future research to confirm the reliability of results. For this reason, the methods used by the various phubbing researchers have been analyzed.

How have phubbing behaviors been researched? (*RQ.2*)

To answer this second research question, information was collected from the selected articles to determine the type of study and the methodology used in each one.

With respect to the type of study it is observed that the universe of publications is divided into two groups: those that express explicitly what type of study is being undertaken (91%) and those that do not (9%). The distribution of the selected works was as follows: 46% are descriptive, 9% are exploratory, 7% correlational, 7% experimental, 5% descriptive and correlational, 5% explanatory, 5% experimental and correlational and 7% literature review (see Figure 3).

With respect to the way phubbing behaviors are evaluated and information is collected in this field, 56% use a quantitative methodology, 21% qualitative, 14% use a mixed-methods, 8% do not specify and the remaining 1% literature review. In general, it can be seen that most of the articles published on phubbing have been descriptive studies adopting a quantitative methodology (see Figure 4).

Figure 5 summarizes sections 3.3 (classification scheme) 4.1 (main topics of the field of study) and 4.2 (distribution of publications by type of study and methodological approach) where research questions 1 and 2 are answered.

This figure shows a mind map of phubbing topics in categories. Also it illustrates the distribution of the research methodologies used in each study. For example, in the technological category that represents the majority of the studies, 18 studies out of 31 used quantitative methodology and applied survey as the main research method. On the other hand, only 6 studies used mix method methodologies which applied a survey, experiment, simulation and interview as a research method, in addition, 5 studies report qualitative methodologies using case study and interviews.

What instruments have been designed for the detection of phubbing behaviours? (RQ.3)

Among the instruments or techniques most commonly used for data collection were the questionnaire (53%), the questionnaire combined with other methods (8%), the interviews in combination with other instruments or techniques (4%), the unspecified (4%), interviews (3%), other techniques such as videos, vignettes or experiment with smartphones (10%) and 4% case studies (see Figure 6).

4.3. Distribution of articles published by year and distribution of articles by journals

This section specifies the years when publications on phubbing research appeared, and the journals that published articles on this topic. This was done to show the evolution of research interest in phubbing, from the first publications on the subject up until January 2020. In
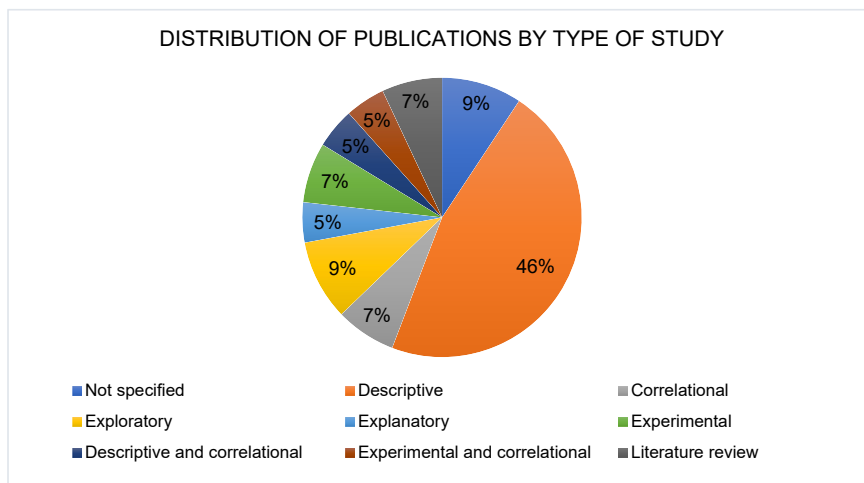
Figure 3. Distribution of publications of phubbing according to type of study. Prepared by the author(s).
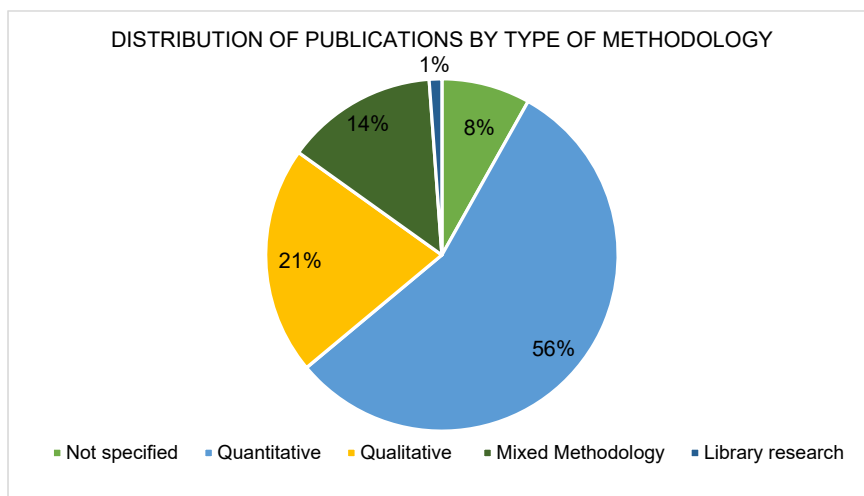

Figure 4. Distribution of publications by type of methodology. Prepared by the author(s).

addition, the reader can learn about the theme of each journal in which phubbing has been published.

Which journals have published articles on phubbing, and at which times? (RQ.4)

The findings presented in Table 4 can help authors decide where to publish their research on topics related to phubbing. In addition, editors and reviewers can determine the extent to which fields of research already actively participates in the academic discussion about the phenomenon and what the implications for them will be in the future.

The following table shows the research areas and the journals in which topics related to phubbing were published.

Moreover, in terms of chronological evolution (see Figure 7), it is observed that the academic output in this field of study shows a constant growth, except for the year 2017, when only eight publications on phubbing appeared in peer-review journals. In the first two consecutive years in which the term phubbing appeared in the media, there are no publications in non-arbitrated journals. However, 2014 to 2016 saw an increase in the number of publications, which peaked significantly in 2019. This information indicates that phubbing will continue to be of great interest to researchers and that much more published researched can be anticipated. In addition, this review has examined the literature published up until January 2020, which saw another four publications so early in the year.

4.4. Main fields of research in which the scientific community studies the phenomenon of phubbing

The findings presented below answer the fifth and final research question of this study and are discussed in relation to the main areas where phubbing studies have been published. These findings indicate to researchers the different fields open to future research on phubbing behavior.

What are the main research fields in which the scientific community has carried out, or intends to carry out, studies on phubbing? (RQ.5)

a. Psychological: As expressed by Carpio, Pacheco, Flores and Canales (2000), psychology is the science that studies the behavior of people in relation to the specific circumstances of their environment, biomedical disciplines and sociocultural characteristics. Related to this, the use of the Internet and other technologies has forced people to live in a more accelerated way. The changes have been so abrupt that they keep people in continual expectation about the future, which causes them to experience feelings of insecurity and restlessness, which in turn influences their physical and mental health.

b. Technological: As described by Valencia et al. (2016), the potentialities of technology are determined by the characteristics of ICTs, such as the storage and dissemination of information; dynamism and
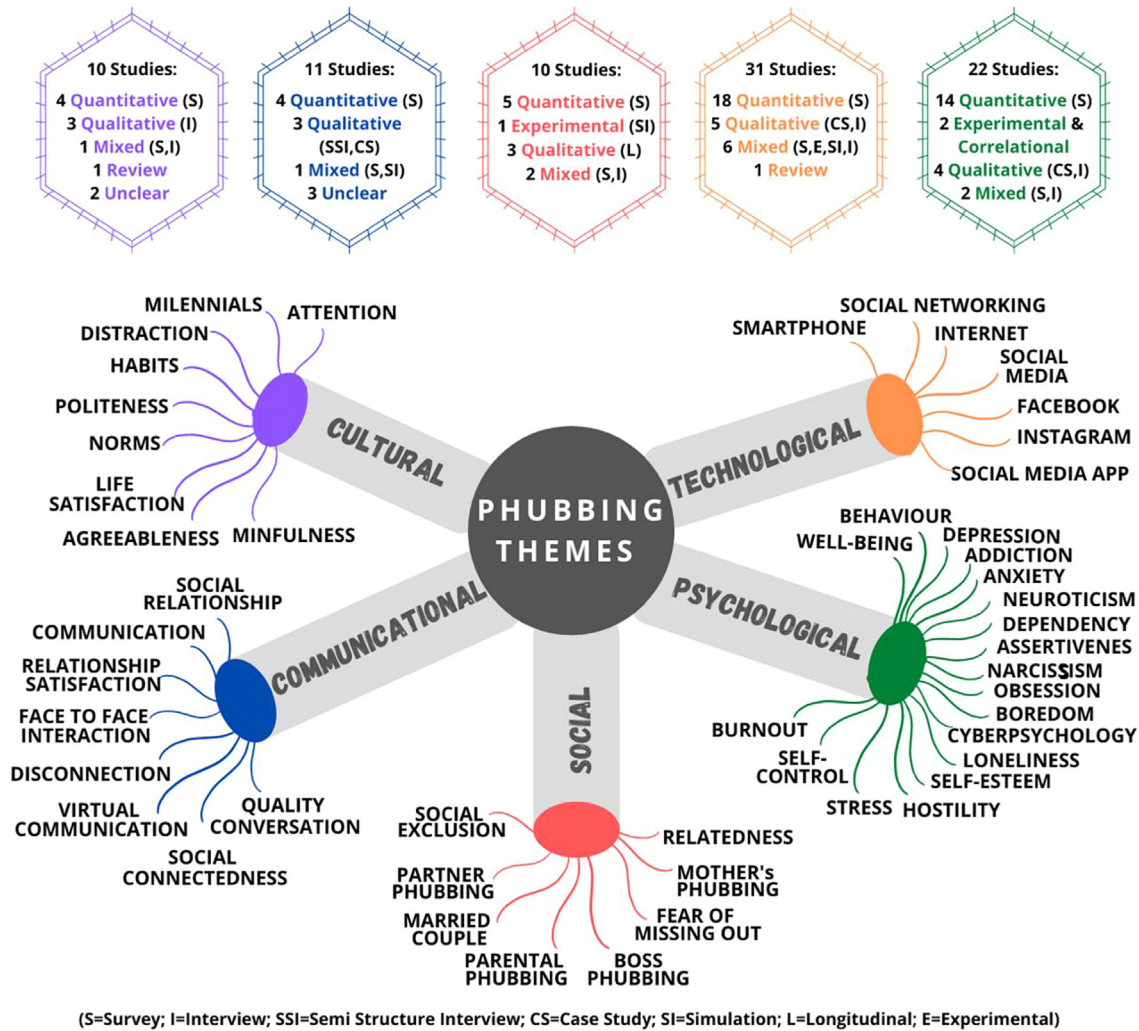
(S=Survey; I=Interview; SSI=Semi Structure Interview; CS=Case Study; SI=Simulation; L=Longitudinal; E=Experimental)

Figure 5. Mind map of phubbing topics, categories and methodology used. Prepared by the author(s).
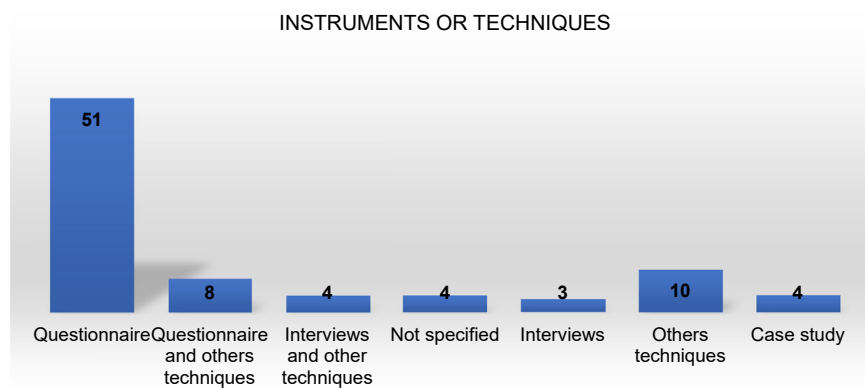

Figure 6. Instruments or techniques used for data collection. Prepared by the author(s).

formalism; hypermedia and multimedia; interactivity and connectivity. Given the social acceptance of these potentialities and the global advent of the Internet, a technological revolution has taken place that has given rise to an unprecedented information society, based on telecommunications, information technology and communication. Lera and Abdías (2017, p.419) explained that "with their power, amplify and make possible the social, economic, political and cultural processes that affect and transform everything that people produce and consume". However, this transformation has not only focused on the media as technological devices but as cultural mechanisms that have transformed the modes of thought and imposed new behaviors, systematizing behaviors mediated by technology.

c. Communicational: According to Labora (2017), the widespread use of computers has allowed the emergence of the digital world which,

Table 4. Distribution of articles by research area and journals. Prepared by the author(s).

| Research area	Journal	Article
Psychological	Computers in Human Behavior	17
	Personality and Individual Differences	4
	Medicine	2
	Journal of Adolescence Psychology	2
	Cyberpsychology, Behavior, and Social Networking	2
	International Journal of Mental Health and Addiction	2
	Addicta: The Turkish Journal on Addictions	1
	Addictive Behaviors Reports	1
	Addition & Health	1
	Advances in Psychologic	1
	Aloma: Psicologia, Ciències de l'Educació i de l'Esport	1
	Children and Youth Services Review	1
	Current Psychology	1
	Dublin Business School	1
	Environment and Behavior	1
	International Journal of Environmental	1
	Journal Family and Community Medicine	1
	Journal of Applied Social Psychology	1
	Journal of behavioral addictions	1
	Journal of economic psychology	1
	Journal of Psychiatry & Neurological Sciences	1
	Journal of Relationships Research	1
	Literature Psychology	1
	Open Journal of Medical Psychology	1
	Procedia-Social and Behavioral Sciences	1
	Psicothema	1
	Psychological Reports	1
	Psychology Research and Behavior Management	1
	The International Journal of Indian Psychology	1
	The Journal of social Psychology	1
Technological	Future Internet	1
	European Conference on Information Systems	1
	Issues in Information Systems	1
	Human Technology	1
	Journal of Technology in Behavioral Science	1
	AI & Society	1
Communicative and Cultural	Mobile media & Communication	2
	Communication research reports	1
	Studies in Communication and Media	1
	Communication Quarterly Journal	1
	Famecos: mídia, cultura e tecnología	1
	Public Relations & Communication Studies	1
	Journal of Arts & Humanities	1
	Turkish Online Journal of Design, Art and Communication	1
Social	Social Science Computer Review	3
	IGI Global	2
	RIMCIS: International and Multidisciplinary Journal of Social Sciences	1
	Journal of Business Studies Social	1
	Alphanumeric Journal	1
	Humanities and Social Science Research	1
	Journal of the Gujarat Research Society	1
	Journal of the Association for Consumer Research	1
	Procedia Manufacturing	1
Educational	European Journal of Physical Education and Sport Science	1
	International Online Journal of Educational Sciences	1
	Research Papers in Education	1

DISTRIBUTION OF THE ARTICLES BY YEAR
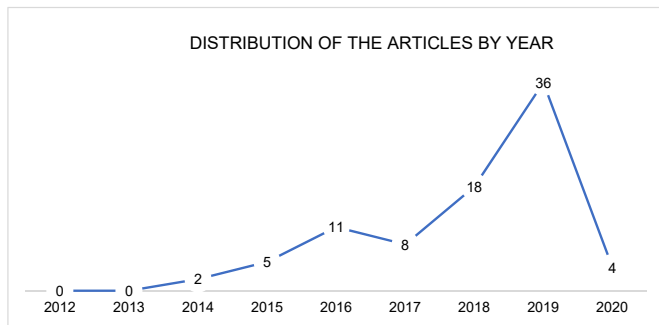
Figure 7. Articles about phubbing published between 2012 and 2020. Prepared by the author(s).

complemented by the emergence of the Internet, social networks, email, or smartphones, has caused communication to acquire unprecedented and unpredicted characteristics, such as absolute immediacy, a global character, the possibility of continuous and constant connection and the infoxication to which people are subject in their day-to-day activities (Labora, 2017). Internet access through mobile phones, audio and video downloads, storage possibilities and the exchange of programs through digital systems are strengths that modify the traditional means of communication.

d. Social: Traditionally, the term 'social' has been used to refer to people, groups or communities that interact within the same scenarios and contexts. Likewise, 'society' or 'community' are defined as the organization resulting from a process whereby people and groups share common activities and objectives that make possible a sense of belonging to it and that may or may not share common territory (Zapata, 2018). Currently, the advancement of the information society has transformed important forms of social interaction, where the quantity and variety of social relationships in the network increase exponentially. In this context, one of the most outstanding changes caused by this informational ecosystem has been the evolution of the human being at a cognitive level. Immersed people who live in an environment of multi-literacy processes and connected screens are participating in the consumption and cultural production of an increasingly innovative environment. Furthermore, social networks enable these people to create communities and generate social bonds with millions of other people, building their identity and the skills of their own social recognition (Simon, 2016.)

e. Cultural: Montiel (2016) defined culture as the set of customs or ways of life that characterize and identify a society. Specifically, culture comprises knowledge, beliefs and law, while universally, culture encompasses art, morals and customs as models of behavior and value systems that regulate the behaviours and human rights of people belonging to the same social group. The acceleration of technological innovation means that, little by little, the pace of technology exceeds the capacity for adaptation of human beings. Therefore, as stated by Valle and Silva (2017, p.188), being updated in information, practices, customs, and gadgets becomes valued despite there being little time to understand these trends. In other words, "living in a state of permanent novelty has become a state of continuous connection".

5. Discussion and future research

The results are intended to help researchers and professionals understand the accumulated knowledge in this emerging and interesting field of research. The findings can also help researchers identify points of potential publications for their own work as well as those research topics that might be of interest for future studies.

According to the results of this review of the literature, it is not surprising that the categories of this study or the "psychological and technological" research fields are the most linked to phubbing publications.

In the first years of phubbing research back in 2014, researchers focused on the effects of excessive smartphone use on people's mental and physical health (Wolniewicz et al., 2018). According to recent findings (Cheever et al., 2018; Demirci et al., 2015; Rathbone and Prescott, 2018; Scott et al., 2017), smartphone users tend to be addicted to their phones and they experience health problems similar to people who have other addictions (Lee et al., 2015). The use of social networks is increasingly common among young people. For instance, "the use of social networks such as Instagram is becoming increasingly associated with addiction to mobile devices. This has led to the fact that smartphone addiction has begun to be linked to various physical problems and psychosocial disorders" (Romero-Rodríguez et al., 2020, p.2). The results also show a predominance of studies in the field of psychology with specific approaches to self-esteem where studies such as that of Hinojo-Lucena et al. (2021) determine the factors that have an impact on the intensive use of Instagram and its relation to smartphone addiction and self-esteem. Also, it shows studies about self-control, distraction, anxiety, depression, negative self, somatization, hostility, loneliness, life satisfaction and phone use duration. Besides, investigated and of great interest in the year 2019 were the relationships between parents and their young or adolescent children, in regard to the effect of phubbing on children's behavior and on the parent-child relationship (Hong et al., 2019; Xie et al., 2019).

The "communication" area has also caused concern. The consequences of using smartphones in terms of the quality of social interactions between individuals has generated a great deal of interest as evidenced in publications on phubbing. Specifically, the study by Dwyer et al. (2018) found that smartphones can decrease the quality of interpersonal interactions. People avoid face-to-face interactions with other people, thereby losing the art of communication. In the investigation conducted by Misra et al. (2014), conversations in which smartphones were present reported lower levels of empathic concern compared to those in the absence of a smartphone at the table. Researchers Przybylski and Weinstein (2013) and Roberts and David (2016) found lower levels of perceived relationship quality, partner trust and empathy in the presence of mobile phones. Barford Reports (2013), Kelly (2015) and Mount (2015) talk about the intentional and unintentional disconnection between people that occurs when they use their smartphones. Studies by Chotpitayasunondh and Douglas (2018a, b) have shown that phubbing behavior itself predicts the degree to which people are subjected to being a "phubber", which can result in a vicious and self-reinforcing cycle of phubbing that causes the behavior to become normative. The effects of phubbing can create negative and resentful reactions so that people perceive that their interaction is of lower quality (Ranie and Zickuhr, 2015), are less satisfied with their interactions (Abeele et al., 2016), have less trust in the interaction partner (Cameron and Webster, 2011), feels less close to the interaction partner when there is a telephone present (Misra et al., 2014), and experiences jealousy (Krasnova et al., 2016) and deflated mood (Roberts and David, 2016).

In the "social" category one finds the study by Chotpitayasunondh and Douglas (2016) where they investigate the predictive value of the Fear of Missing Out (FoMO), which is described as "the fears, concerns and anxieties that people can have in relation to being in (or out of) contact with the events, experiences and conversations that occur in their extended social circles" (Przybylski et al., 2013, p.1842). Other studies conducted by Cheever et al. (2014), Hong et al. (2012) and Lepp et al. (2014) found that Fear of Missing Out is associated with the problematic use of smartphones. Chotpitayasunondh and Douglas (2016) suggest that "FoMO would predict the addition of mobile phones, which in turn can predict the behavior of phubbing" (p.10), that is, the fear of losing important information conveyed via social networks. This may be associated with the problematic use of the telephone, which means that people turn to their phones instead of interacting with people in their presence. On the other hand, phubbing behaviors have become a socially accepted norm. Societies have always experienced changes with the introduction of new social norms and people tend to adopt these norms

quickly. Norms also derive from observable and personal behavior. Therefore, "it is possible to determine the degree to which observable behavior (being criticized) and personal behavior (phubbing) can predict the degree to which people view phubbing as normative" (Chotpitaya-sunondh and Douglas, 2018a, b, p.11).

Phubbing can also come under the "cultural" category. As explained by Tumino and Boumissen (2017), technologies carry a moral burden that, when used for educational purposes, can have multiple benefits. However, when misused, technology is a powerful weapon against the moral and spiritual values most appreciated by human beings. The penetration of ICT has led to important changes in people's way of life, in their ways of relating, and especially in their way of learning, assuming a transition from a well-informed society to a formed society, not only in the professional field, but in a broad cultural sense. Cultural values developed on the basis of new forms of communication involve the identity of citizens. In this way, society reinterprets traditional forms of communication adapting them to the prevailing cultural image (Labora, 2017).

After commenting on the main areas dealt with in phubbing publications, pertinent to these discussions and future research, it is worth highlighting that, although the number of academic publications found on phubbing in this study have increased in recent years in terms of technological knowledge, their growth has not been constant or representative, since the number of studies conducted on this phenomenon does not correspond to the rapid acceleration of the number of people who have developed this behavior in recent years.

To conclude, it is noteworthy that the 84 publications chosen for bibliographic analysis are not restricted to one specific place, but have drawn interest globally and in very diverse fields.

6. Limitations

It is important to keep in mind that there are still no academic consensus phubbing descriptors that can facilitate the search for relevant studies, so there may be research on phubbing that is not included in this review of the literature and this also causes the databases are limited in phubbing research.

7. Conclusion

Phubbing behaviors have become a phenomenon of global interest to researchers. The aim of this work is to provide a descriptive overview of phubbing research as a first step towards understanding phubbing development since 2012. Based on a structured search resulting in 84 articles published in journals of psychology, technology, communication, society and education were found, the research topics that were mainly addressed up until January 2020 are elaborated and evaluated. In doing so, it examines how the topics related to phubbing have evolved (RQ.1), which methodologies are more representative (RQ.2), what research instruments have already been created (RQ.3) and the years which these research journals published articles on phubbing (RQ.4). Finally, based on the topics related to phubbing and the research areas of the journals, the main research fields were proposed for future research on phubbing (RQ.5).

To systematically explore the research topics and synthesize the corresponding phubbing literature (RQ.1), Elliott (2018) categorization process is followed, resulting in research topics related to phubbing.

Regarding the second research question (RQ.2), in the studies that investigate phubbing behaviors, the quantitative methodology is the one most used, followed by the qualitative methodology and mixed methods. In addition, the instruments created to evaluate phubbing behaviors have been, to date, questionnaires that have been created from existing ones, since the phenomenon of phubbing is a relatively recent phenomena (RQ.3).

Moreover, it was found that the profusion of publications based on phubbing has generally been low in the first years of the origin of the term, being also an important reason why between 2012 and 2014 there were no publications in research journals. Although the number of publications pertaining to phubbing increased in the years 2016 and 2018, 2019 saw the most publications on this issue (RQ.4).

Finally, based on the results of this literature review, areas of study were proposed for future research that may provide additional interesting information about the field of phubbing behaviors (RQ.5) that have not yet been covered. The results are expected to stimulate and guide future studies in this new stream of research on the convergence of society, culture and communication.

Declarations

Author contribution statement

Estefanía Capilla Garrido: Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Tomayess Issa: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

Gutiérrez Esteban: Conceived and designed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Sixto Cubo Delgado: Performed the experiments; Analyzed and interpreted the data; Wrote the paper.

Data availability statement

Data associated with this study has been deposited at Dehesa. Institutional repository of the University of Extremadura under http://hdl.handle.net/10662/3455.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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