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Psychological Factors of Digital Hoarding Behavior among Post-Graduate Research Students

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Abstract
Digital hoarding is a rather subtle and emerging phenomenon. Similar to the hoarding problem, this phenomenon will attract the most attention in the future because of its emerging necessity. Research students are more likely than the general population to engage in digital hoarding. This study explores digital hoarding behaviors, associated factors, rationales, and implications for post-graduate research students. This study used a case study research approach. Purposive sampling was used to select a sample based on the characteristics of the individuals. The analysis of the data revealed that the main drivers behind students' tendency to amass greater numbers of digital data that they may one day need for personal usage, education, or further study. Additionally, contributing elements to the behavior of digital hoarding were found. They include emotional attachment to digital content, procrastination, sadness, worry about losing digital files, repeated thoughts about digital files, traumatic past experiences of losing their priceless digital data, loss of attention due to saving a greater number of digital files, recalling issues, indecision, and impulsiveness.

Keywords: Digital hoarding, Research students, psychological factors, mental illness, emotional attachment, anxiety, depression, case study, thematic analysis

Introduction

Digital Hoarding is "the accumulation of digital files to the point of perspective loss, ultimately leading to stress and disorganization" (van Bennekom, Blom, Vulink, & Denys, 2015, p. 2). Digital hoarding has a significant influence on everyday life functioning, even if it has little effect on the cluttering of living environments (van Bennekom et al., 2015).

A new kind of hoarding known as "digital hoarding" may have emerged as a result of the exponential growth in technical innovation and the limitless possibilities for digital storage (van Bennekom et al., 2015). The buildup of digital content that makes it difficult to maintain perspective is known as "digital hoarding," which eventually leads to tension and disarray (van Bennekom et al., 2015). Digital hoarding has a significant influence on everyday life functioning,

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even if it has little effect on the cluttering of living environments (van Bennekom et al., 2015).

Research studies indicate that it is important to investigate the connection between physical and digital hoarding, the extent to which these behaviors cause distress and impairment, and whether those who exhibit these behaviors may be diagnosed with Hoarding Disorder (HD) (van Bennekom et al., 2015). Research students are particularly vulnerable to digital material interaction, so it is important to explore associated factors in this population.

Digital hoarding needs to be addressed in Pakistan, as it does in many other nations but has not yet been observed or recorded in psychiatric settings (Yousaf, Kausar, & Fatima, 2021). Additionally, it hasn't received any professional attention, particularly in terms of therapeutic intervention (Yousaf, Kausar, & Fatima, 2021). However, it is managed as a minor symptom of OCD (Obsessive Compulsive Disorder) (Yousaf, Kausar, & Fatima, 2021).

There is little information as to why/how this phenomenon occurs in the behavior of digital hoarding. Digital behavior-related factors have not yet been identified. There are surprisingly few research studies on students who exhibit digital hoarding behavior. Research students are more likely to accumulate digital belongings, although this tendency has not yet been explored in any studies.

Methods

This study used a qualitative case study research design. Case study research entails examining a case in a current, relevant environment or context (R. K. Yin, 2009). Due to its focus on current occurrences in a natural environment, this research method does not necessitate behavioral control (Robert K Yin, 2018). Because they aid in creating a comprehensive and nuanced picture of participants' interactions with the topic being examined, qualitative research methods were employed (Merriam & Tisdell, 2015).

The research study was conducted in the following Departments of Government College Women University Sialkot. Purposive sampling, a class of non-probability sampling procedures that involves choosing samples based on the characteristics of the individuals, was used (Nikolopoulou, 2022). Therefore, sampling units are selected purposefully in purposive sampling (Nikolopoulou, 2022).

Participants in this study were chosen based on the following criteria: Fall between 23 to 40 years of age range; Participants who are research students (MS or PhD); Had their own digital devices; Literate on the internet and digital device usage.

This study used the data analysis process in a qualitative investigation to combine, condense, characterize, and evaluate the significance of the data using the qualitative data analysis methods suggested (Braun & Clarke, 2022). Reflective thematic analysis by using Quirkos qualitative data analysis software) was done for the analysis of qualitative data. Thematic analysis is an inductive method that makes use of coding to enable themes to emerge directly from the data.

About 55 post-graduate research students were contacted for screening. Of them, 35 did not fit the criteria for digital hoarding, and those who did fulfill the requirements for digital hoarding were chosen for additional interviews. After

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that, semi-structured interview data from 20 participants by weaving through their experiences to uncover themes.

Theoretical Framework

There are many studies that were based on the cognitive-behavioral model of hoarding Frost, Steketee, and Tolin (2015). The paradigm links information processing deficits, negative mood states, dysfunctional emotional attachments to and incorrect beliefs about items, and hoarding behaviors to these causes (Frost, Steketee, & Tolin, 2015). Recent research has also connected hoarding to trauma and detrimental early developmental effects (Frost, Steketee, & Tolin, 2015).

Hoarding symptoms, according to cognitive behavioral theories of HD, are brought on by a variety of fundamental flaws. According to (Frost, Steketee, & Tolin, 2015), these imperfections encompass genetic, environmental, psychological, and neurological components such as impulsivity, trauma, stress, and family history. The development of HD is thought to be impacted by three major vulnerabilities, which are typically thought to result in information processing deficiencies, incorrect beliefs about oneself, other people, and objects, and maladaptive reinforcement loops (Mathes, Timpano, Raines, & Schmidt, 2020).

Literature Review: Psychological Factors in Digital Hoarding

Stress, anxiety, and depression associated with digital possessions and excessive fear of losing those possessions coexist with psychological symptoms and digital hoarding practices (Thorpe, Bolster, & Neave, 2019). Hoarding digital items, such as documents, media, pins, and emails, is also associated with obsessive-compulsive disorder (Thorpe, Bolster, & Neave, 2019). There is a positive relationship between physical hoarding, anxiety, depression, indecisiveness, and digital hoarding (Thorpe, Bolster, & Neave, 2019).

Researchers describe erroneous ideas about the nature of possessions, maladaptive attachment to possessions, and mood disorders as etiologically relevant factors (Emery et al., 2016); among these are Obsessive Compulsive Disorder, Depression (Frost, Steketee, & Tolin, 2015), Anxiety (Tolin & Villavicencio, 2011), Attention-Deficit Hyperactive Disorder (Tolin & Villavicencio, 2011), Dysfunctional Beliefs about the nature of possessions (Schiele & Ucok Hughes, 2013), Emotional Attachments to Possessions (Thorpe, Bolster, & Neave, 2019), Traumatic Life-Events (McLaughlin et al., 2013), and Familial Modeling (Tolin, Frost, & Steketee, 2007).

The symptoms of OCD, which afflict 18% to 42% of OCD patients, are most frequently linked to digital hoarding (Chen et al., 2017). On measures of digital hoarding, researchers discovered that compulsive hoarders (80% of those who have been diagnosed with OCD) scored considerably higher than OCD sufferers (without hoarding) and controls (Sillence, Dawson, McKellar, & Neave, 2022).

Significant suffering, with social phobia, anxiety, and sadness, is frequently observed in digital hoarders (Sedera, Lokuge, & Grover, 2022). According to statistics, digital hoarding accounted for 37% of a person's overall anxiety level, as determined by a recognized depression, anxiety, and stress scale (Sedera, Lokuge, & Grover, 2022).

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Emotional ties to a high number of digital belongings were a defining feature of the sentimental preserving motivations that were discovered (Schiele & Ucok Hughes, 2013). Furthermore, the precise emotional justifications offered for greater digital preservation appear to fit into established categories of emotional attachment discovered in the research of HD (Frost, Steketee, & Tolin, 2015). One of these categories is preserving priceless memories, a classic defense for physical hoarding that has also been incorporated into numerous studies on digital hoarding (Sweeten, Sillence, & Neave, 2018).

Findings: Psychological Factors

Mental Illness

Mental illness refers to a mental disorder or psychological disorder. It is a behavioral or mental pattern that causes significant distress or impairment of personal functioning. All participants were asked about experiencing mental illness due to excessive accumulation of digital material. Most of those participants reported that they undoubtedly experienced concerns associated with mental illness, such as digital device storage troubles, abrupt digital device stuckness or crash, a large amount of digital data, and failure to obtain the correct file at the appropriate time. All of which contributed to mental illness. For example, three participants reported that,

> *Yes, thinking about where to save these files is a problem because I have three USBs, and all three are almost full. I try to save them while I'm studying. (Participant 1)*
>
> *This is one of the distresses. It happens a lot if the files get jumbled up, and secondly, if I can't find any of my files, like I was saying that my laptop was broken, then that was distressing, it was very distressing for me. And that's why I even cried for two days. (Participant 7)*
>
> *Stress is very high. If there is any problem due to files, I get very angry, and because of this, I have broken glasses often, etc. (Participant 6)*

However, few participants contradicted others as they reported that they became mentally stronger after experiencing mental illness once. One participant said,

> *I think I had a good bond with some people, and I mean those people got deleted, so sometimes I look at their chats or related material, and I wish I was still a friend. The problem happens, but Alhamdulilah, I am mentally very strong, so I didn't have that much of a problem; but yes, you sometimes fail with regard to these things and get into mental illness for some time. (Participant 3)*

Sadness

A prolonged sense of sadness and loss of interest are symptoms of depression, a mood illness. Clinical depression, also known as major depressive disorder, affects how you feel, think, and behave and can cause several emotional and physical issues. All participants were asked if they felt sadness or low mood due to excessively accumulating digital material. Most participants said they felt very upset when their digital content was accidentally erased by them, as well as when their digital content was lost due to a laptop's windows collapsing or sudden

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damage to digital gadgets. And it makes them much more depressed if they don't have a backup or if their material is priceless, extensive, and ancient. For example, some reported that:

> *Yes, it has happened to me that my functioning is also very disturbed. And as I said, when files were accidentally deleted by me, I started feeling very angry. I even cried; my mood was very sad, and I did not talk to anyone. But to get out of this trauma, I need an hour or two. I convince myself that it's okay. (Participant 1)*
>
> *Yes, I have felt a low mood. I was in B.S., and I e-mailed my research synopsis to the teacher. And there were so many emails that I couldn't see that I didn't get the exact draft without mistakes. Because of this, my mood was low; you can consider it as depression. (Participant 6)*

A few participants reported a different event about losing digital files and how they became sad after that:

> *Yes, the mood went down. I had a thesis, and the laptop shut down. Unfortunately, my last file, which was my approved file, was on the desktop, not in the C folder, and I just had to take a printout of it. When I had to submit my thesis for binding, my laptop went off, and the window blew up. I didn't even have a backup, so it was very traumatic for me. Then I realized that I sent that file to one of my friends because she wanted it. So, I asked her for the file, and I got it, but it took 2 to 2.5 hours, and those 2 hours were very painful. (Participant 14)*

Worry and Anxiety

Anxiety and worry both refer to similar emotions of unease, fear, or concern. Worry, on the other hand, tends to be more focused and controllable, while anxiety is more all-encompassing and overwhelming. Anxiety, which has emotional, physiological, and cognitive components, includes worry as one of its components. All participants were asked if they had ever experienced worry or anxiety about their digital material and that they would lose their digital material one day. Most participants said they were concerned that they would lose their digital data in the future. Several participants said they used to be concerned about digital material, but now that they have uploaded their data to Google Drive, they were not as concerned as they once were. For example, they reported:

> *Yes, I do get worried when something is deleted. If I can't find the file again and it was an important file, etc., I worry. When a file gets deleted, I worry that I won't know where it has gone and where I can find it again. All this does happen. (Participant 2)*
>
> *I have never thought that long, but it happens that you say that you have this important thing, then it is not deleted, then one of the facilities of Google Drive is that we can upload our files here, and that saves data for a long term, but I haven't saved anything to Google drive yet. (Participant 3)*
>
> *Yes, anxiety happens, but we were told when we were starting the research to back it up that we have different methods and apps, so*

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> *save it in them, then save it first, and then do something else. (Participant 15)*

Emotional Attachment

Emotional attachment is the sense of intimacy and affection that results from having a connection to other people, ideas, practices, possessions, and conditions. All participants were asked if they had ever felt that they got emotionally attached to digital material. Many of those participants also stated that they become emotionally attached to their research-related papers, articles, theses, and research work. Some also stated that they became emotionally attached to their photos, videos, and pictures of their loved ones and friends because these items represent precious memories for them. For example, they reported that:

> *Specific files, yes, those related to research are difficult to delete, while those related to my topic are more difficult to delete. (Participant 2)*
>
> *Yes, I am. Many things have happened since I related. There are memories from 8-9 years ago. I see that those were good times. I am emotionally attached to those things. (Participant 14)*
>
> *If there are pictures, then there is memory, and if there is research data, then it is necessary; then it becomes an attachment. (Participant 15)*

A few participants who disagreed with other participants about getting emotionally attached to digital material reported differently. For example, a participant described:

> *In this, your memories and pictures of your siblings' childhood, you become much attached to them. This is a factor in it, but human memories do not last long, so this attachment does not last long. (Participant 3)*

Recurrent Thoughts

Recurrent thoughts are characterized by the sudden appearance of bizarre, unsettling thoughts or images that seem to come out of nowhere. They also involve a persistent worry that the individual will say or do something inappropriate or unpleasant. Recurrent thoughts are intrusive and involuntary thoughts that can create significant distress. Though the content may seem alien, recurrent thoughts are experienced as the person's own thoughts rather than as imposed from without. The individual with recurrent thoughts often makes efforts to suppress or neutralize them. All participants were asked if they think they have recurrent thoughts about your digital material. Most of those participants stated that they have thoughts about losing their material or about the accumulation of a lot of material, and a few participants reported that they do not have recurrent thoughts about their digital material. For example, 3 participants reported that:

> *Yes, this is a lot with me, and most of all, it happens to me when the mobile storage is running out. So, many thoughts come to my mind related to these files, mobile hangs, or laptops. (Participant 1)*

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> *Don't get deleted; thoughts are repeatedly coming in such a way that they will not be needed in the future, like if I am admitted to PhD. (Participant 5)*
> *Yes, thoughts come to mind when the file of my thesis project is deleted by me, or sometimes my laptop gets damaged. Then, thoughts come to mind that if I had emailed it, then I would not have had such a problem. (Participant 16)*
> *Very much, as I have told you earlier, those thoughts come into my mind until and unless I go and save the specific file about which I got thoughts. (Participant 8)*

Several participants disagreed with the rest of the participants about getting recurrent thoughts about deleting or losing digital files and reported that:

> *Very rarely do such thoughts come into my mind. (Participant 7)*
> *Not that many thoughts come into my mind. (Participant 13)*

Impulsivity

Impulsivity is the propensity to act without thinking through the implications or the situation. Impulsivity is frequently linked to unfavorable or dangerous outcomes. All participants were asked if they think they have ever felt difficulty in their functioning due to impulsivity in their behavior. Many participants mentioned that they become impulsive, agitated, and angry when they didn't find the proper file on their digital devices, as well as when they had less time to finish any project. Several people claimed that impulsivity was a characteristic of their personality, while few claimed that working with digital gadgets prevented them from becoming impulsive. For example, they reported that:

> *Impulsivity, yes, yes, I get emotional, I get angry. This is how it happens while searching for a document related to the subject. (Particiant20)*
> *Yes, impulsivity happens sometimes, obviously, as your mental health is, so is your attitude. (Participant 10)*

Some participants reported contradictions and said that if they become impulsive, it's not just because of digital material. There might be other factors and situations involved in that behavior and reported that.

> *Impulsivity comes and depends on time. Like we are research students. Research is not an easy task. If our experiment ever goes wrong, then impulsivity comes, anger comes, and we get worried about small things. Then, these things become relaxed laterally, and we also learn those things with practice. (Participant 11)*
> *Impulsivity depends on time; if time is less, then there will be impulsivity. (Participant 15)*

A few participants totally disagree with this phenomenon of impulsivity, and they never become impulsive because of digital data and stated that:

> *I'm impulsive; it's part of my personality. I don't know if it's because of the files or just because I feel like it's part of my personality that I'm impulsive. (Participant 2)*
> *No, I don't get impulsive. (Participant 17)*

Discussion of Psychological Findings

The primary discovery of this study is the occurrence of digital hoarding

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behaviors among post-graduate research students. Additionally, Tugtekin's research study (Tugtekin, 2022), which included 478 students, provides theoretical support for the validation of this finding. The results of the study show that the participants accumulated a large amount of digital data, particularly photos, suggesting that students engage in digital hoarding behaviors (Tugtekin, 2022).

The results of this study were supported by a research study conducted by Thrope, Bolster, and Neave (2019). The findings showed that stress, anxiety, and depression associated with digital possessions and excessive fear of losing those possessions coexist with psychological symptoms and digital hoarding major causes. This is the current study's second major finding. The current study has explored in-depth the associated factors of digital hoarding behaviors in post-graduate research students. These factors include indecisiveness, anxiety, depression, and recall issues.

The third major finding of this study is that disorganization, procrastination, emotional attachment to digital material, and inattention are associated factors of digital hoarding behaviors in post-graduate research students. Research by Hartl and Frost supports the current findings, as many of the clients with digital hoarding behavior had previously received an ADHD diagnosis, and many others reported inattentive symptoms like procrastination, disorganization, and failure to finish tasks on time, which he investigated in his research (Frost, Steketee, & Tolin, 2015). Participants in a different study discussing the "possible cyber security implications of digital hoarding behavior" expressed an emotional link to these data files and how losing they would make them feel depressed (Neave et al., 2020).

The study's findings demonstrate that there is a strong correlation between physical and digital hoarding. Comparably positive correlations between digital hoarding and symptoms of anxiety, depression, and hesitation, all of which are common in physical hoarding, were seen in this study. However, according to analytical results, physical and digital hoarding may both be causing digital hoarding (Thrope, Bolster, & Neave, 2019).

The findings of this study relate to the use of digital hoarding by post-graduate research students in the community, therapeutic settings, and policymakers. Our findings are further supported by earlier research, which shows that digital hoarding behavior can benefit policymakers and have a long-lasting effect on a variety of contexts, including administrative offices, IT centers, clinics, and educational institutions. It can also have a positive impact on the general public and clinical populations (Oravec, 2022).

Conclusion

This qualitative study explored the psychological factors underlying digital hoarding behaviors among postgraduate research students. Through in-depth interviews with 20 postgraduate research students, rich insights emerged into the psychological mechanisms that drive digital hoarding behaviors in academic settings.

The findings revealed seven key psychological dimensions that contribute to digital hoarding: mental illness manifestations, sadness and depression, worry and anxiety, emotional attachment to digital materials, recurrent thoughts about data loss, impulsivity in behavior, and difficulty paying attention. These

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psychological factors demonstrate the complex emotional and cognitive processes that underlie digital hoarding behaviors.

The summary of the findings related to psychological factors revealed that the majority of those individuals claimed that they certainly had mental illness-related concerns, including issues with digital device storage, sudden digital device freezing or crashing, a large volume of digital data, and inability to locate the right file at the right time. All of this played a role in mental distress. The majority of respondents stated that they experienced extreme anxiety if they accidentally deleted digital content and that their depression intensified if they lacked a backup or if the content was extensive, valuable, or old. Most of the interviewees also had their concerns about losing their digital information at some point in the future. Many of those participants also admitted to developing strong emotional attachments to the papers, articles, theses, and other research-related products they produced. Some said that because these things held special memories, they developed an emotional bond with their images, videos, and photos of their friends and family.

The present study has laid a very important steppingstone towards perceiving the psychological aspects of digital hoarding behavior in research students. This study helps to understand that digital hoarding has a complex psychology behind it and possibly negative effects can be solved via mindful digital practices and more healthy academic cultures that value digital wellbeing.

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