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Social Media, Impulsive Buying and Panic Buying in Times of Covid-19: Study in the Triangulo Mineiro and Alto Paranaiba

Mídias Sociais, Compra Impulsiva e *Panic Buying* em Tempos de Covid-19: Estudo no Triângulo Mineiro e Alto Paranaíba

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Abstract

During the Covid-19 pandemic, people resorted to social media to establish interpersonal relationships, obtain information and escape negative feelings. However, the literature suggests that the compulsive use of these media can trigger impulsive buying and panic buying, behaviors that are harmful to mental health and that can cause economic disruption. In this context, this article analyzed the relationship between the compulsive use of social media, impulsive buying and panic buying in Triangulo Mineiro and Alto Paranaiba, mesoregions that stand out due to the high number of cases of the disease in the interior of Brazil. From a survey with 118 persons, with data analyzed using multiple linear regression, a positive relationship was found between the compulsive use of social media, impulsive buying and panic buying, without, however, having a moderating effect of the informational use of these media.
Keywords: Covid-19. Panic. Purchase.

Resumo
Durante a pandemia de Covid-19, as pessoas têm recorrido às mídias sociais para estabelecer relações interpessoais, obter informações e escapar de sentimentos negativos. No entanto, a literatura sugere que o uso compulsivo dessas mídias pode desencadear a compra impulsiva e o *panic buying*, comportamentos prejudiciais para a saúde mental e que podem causar perturbação econômica. Nesse contexto, o presente artigo analisou a relação entre o uso compulsivo de mídias sociais, a compra impulsiva e o *panic buying* no Triângulo Mineiro e Alto Paranaíba, mesorregiões que se destacaram pelo elevado número de casos da doença no interior do Brasil. A partir de levantamento com 118 indivíduos, com dados analisados por meio de regressão linear, foi constatada uma relação positiva entre o uso compulsivo de mídias sociais, compra impulsiva e *panic buying*, sem que houvesse, no entanto, efeito moderador do uso informacional dessas mídias.
Palavras-chave: Covid-19; Pânico; Compra.

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1 Introduction

Social media is one of the biggest phenomena on the Internet. In 2020, more than 3.6 billion people had access to a social network, and the forecast is that in 2025 this number will reach 4.41 billion (Statista, 2021). There is an estimated population of approximately 211 million people in Brazil and 140 million are users of these social networks (IBGE, 2020; Statista, 2021).

The phenomenon of social networks in Brazil and in the world is related to an unwanted side effect: the compulsive use of the internet. Most studies have been dedicated to the analysis of cognitive dysfunctions related to the pathological use of games and social media (Van Den Eijnden; Lemmens; Valkenburg, 2016) and, with regard to social media, its compulsive use has been characterized by significant losses, such as use-oriented thinking, longer time connected to these social networks, changes in mood, frustration after unsuccessful attempts to reduce use, withdrawal crises and interpersonal conflicts (Brailovskaia & Margraf, 2020).

A significant relation has also been reported between the compulsive use of social media and psychological factors such as the sense of control, that represents an important element of human life, which its absence causes different emotional reactions, especially in long-term crises (Dobransky & Hargittai, 2021; Keeton, Perry-Jenkins, & Sayer, 2008). For Brailovskaia and Margraf (2021), in the unstable context of the 21st century, individuals experience different situations that impact this sense of control and social media can act as an escape valve for negative emotions.

In the Covid-19 pandemic scenario, caused by the SARS-Cov-2 coronavirus, there is a deepening of instability, that caused the adoption of isolation and social distancing measures, necessary to control the spread of the virus (World Organization of Health, 2021). These measures caused the loss of a sense of control over daily activities and anxiety symptoms related to uncertainties about the future (Brailovskaia & Margraf, 2020; Taylor et al., 2020; Xiong et al., 2020).

As a chain effect, some studies reported that feelings related to uncertainties about the future triggered two other phenomena: impulsive buying and panic buying. Impulsive buying designates an unprepared choice to buy products or services, seeking to satisfy a need for immediate fulfillment (Kazi et al., 2019) and panic buying occurs when negative feelings, including fear and insecurity, lead individuals to buy more than usual, especially in periods of instability. Panic buying has already been reported during other phenomena, such as the 2003 SARS epidemic in China and the 2011 earthquake in Japan (Lins & Aquino, 2020).

Impulsive buying and panic buying behaviors can be aggravated by the use of social media, because these channels have been used not only to establish online relations and/or escape from negative feelings, but also to obtain and share information, often false and with emotionally impacting content (Naeem, 2021). By excessively resorting to this information, the consumer may adopt purchasing and storage practices that can cause significant shortages. In the UK, for example, the demand for hand sanitizer grew by 255%, sales of groceries grew by 43% compared to the pre-pandemic period and a paradoxical phenomenon was observed: sufficient internal stocks, but empty shelves in supermarkets (Naeem , 2021).

In Brazil, the panic buying behavior during the pandemic was one of the factors related to the shortage of raw materials and rising prices. The number of online purchases in the country increased by more than 98% during the pandemic and the offer of packaging, for example, presented significant interruptions, as a reflection of a new habit: buying products through

internet as a form of distraction and to combat anxiety (Siqueira, R. 2020; Chiara, 2021). In the state of Minas Gerais, a supermarket chain operating in the mesoregions of Triangulo Mineiro and Zona da Mata reported a growth of more than 123% in the sale of toilet paper during the month of March 2020 (Siqueira, J. 2020).

Therefore, this article analyzed the relationship between the compulsive use of social media, impulsive buying and panic buying during the Covid-19 pandemic. A survey was carried out with 118 consumers from the Triangulo Mineiro and Alto Paranaiba, Brazilian mesoregions that stood out for the high proportional number of cases of Covid-19 in the interior of the country (Rodrigues, 2020). Data were analyzed using descriptive statistical analysis, Pearson correlation and simple linear regression analysis.

2 Theoretical Background

2.1 Panic buying and the Covid-19 pandemic

The emotions felt by individuals during the Covid-19 pandemic resulted in behavioral changes, among them, purchasing and consumption behavior can be cited, since fear is a powerful driver of human conduct, especially in times of crisis. (Lins & Aquino, 2020). From the pandemic scenario, a rush to supermarkets was observed, empty shelves and people making extra purchases, with the aim of stocking products in their homes (Lins & Aquino, 2020).

This change in consumer behavior, motivated by fear, uncertainty and panic is known as *panic buying* (Lins & Aquino, 2020). Panic buying refers to the behavioral change of consumers, who stop buying products in the usual quantities, to buy products in excessive quantities, before, during or after a disaster, crisis of any nature, or even in anticipation of a price increase or possible shortage of products (Chua et al., 2021; Yuen et al., 2020). The high level of uncertainty generated by the pandemic has resulted in an unprecedented level of panic buying (Barnes et al., 2021; Chua et al., 2021; Yuen et al., 2020).

Panic buying mainly hit household essentials. Images of empty shelves were quickly disseminated on social media, reinforcing the feeling of generalized anxiety and fear, intensifying panic buying (Barnes et al., 2021; Sim et al., 2020). This behavior is considered socially unwanted herd behavior, with severe negative effects for society, as large amounts of basic necessities and the supply of medical and hospital products are affected and run out of stock (Chua et al., 2021; Yuen et al., 2020). This situation prevents or limits other consumers, especially more vulnerable groups, from having access to goods (Yuen et al., 2020).

In supply chain, panic buying causes disruptions, affecting ordering, replenishment and retail distribution, leading to a lack of stock and, consequently, an increase in the price of products (Yuen et al., 2020). In addition, items purchased as a result of panic buying and that become garbage, often due to lack of use, generate waste and contribute to the greenhouse effect and excessive gas emissions (Chua et al., 2021).

The study conducted by Yuen et al. (2020) aimed to identify and summarize the causes of panic buying. The authors found as causes, perception, fear of the unknown, coping behavior and social psychological factors such as social influence and trust. Likewise, Chua et al. (2021) reiterate that the actions of close people influence individual action and cause engagement in panic buying.

Sim et al. (2020) also aimed to provide explanations for the possible causes associated with panic buying and, according to the authors, there are several plausible explanations. First, the behavior could be the result of feelings of anxiety and panic, resulting from the conflict "maintaining regular routines versus the uncertainty of the duration of the pandemic"; second, an attempt to deal with a stressful and out-of-control situation; and, finally, it can be a behavior

in response to loss of control over the future and social pressure to act similarly to other people (Sim et al., 2020).

In this digital era, information is always available to people and is quickly disseminated through electronic channels, which contributes to impulsive buying and panic buying. This is because, although these electronic channels can be used to disseminate important information, they are also susceptible to the dissemination of rumors and fake news in such a way as to confuse individuals and cause greater anxiety, fear and, consequently, panic buying (Yuen et al., 2020).

2.2 Panic buying, impulsive buying and social media during the Covid-19 pandemic

Social media can be understood as any website, where messages are posted to an audience (Sosial et al., 2020). Social media use is defined by Youssef et al. (2020) and Michikyan and Suárez-Orozco (2016) as the electronic interaction between people through specific platforms such as Instagram, Facebook and Twitter, which allow users to interact with each other through conversations, comments on posts, uploading photos, status updates and sharing geolocations.

In addition to social interaction, people also use social media to discuss and exchange ideas about products and services, and thus, buying products and services online has become a common practice (Kazi et al., 2019). The popularization of social media, however, also generated, as a side effect, the problematic use of the internet, a definition still without consensus, as highlighted by Wegmann et al. (2015) in their study.

One of the problems resulting from the compulsive use of the internet and social media is impulsive buying, which refers to an unprepared choice to buy a product or service in order to satisfy an immediate fulfillment (Kazi et al., 2019). This happens because consumer attitudes towards a product or service tend to be related to social influence. Both impulsive buying and panic buying are related to emotional states, however, impulsive buying is independent of negative emotional states (Eva et al., 2021) and is more related to personality traits such as attachment and materialism (Kaur & Malik, 2020). Thus, it is inferred the usefulness of studies that assess whether impulsive buying behavior is also related to panic buying, that occurs in times of crisis.

Considering the context of the Covid-19 pandemic, Ahmad and Murad (2020) analyzed how social media has affected self-reported mental health and the spread of panic in Iraq. Participants reported that social media had a significant impact on the spread of fear and panic, with a potential negative influence on mental health and psychological well-being. Still referring to mental health, Gao et al. (2020) assessed its association with social media exposure. Depression was assessed by the Chinese version of the WHO-Five Well-Being Index and anxiety was assessed by the Chinese version of the Generalized Anxiety Disorder Scale (GAD-7). The prevalence of depression, anxiety and the combination of depression and anxiety was 48.3%; 22.6%; and 19.4% during the Covid-19 outbreak in Wuhan, China. More than 80% of participants reported frequent exposure to social media.

When carrying out an analysis of fake news in the context of the covid-19 pandemic, Ibiapina et al. (2020) cite the challenge faced by health authorities, given the fast spread of fake news. In this study, social media were identified as the most important way of disseminating untrue information. This fact is in line with the concept of "infodemic", referring to the harmful circulation of false information (Gao et al., 2020; Primo, 2020; González-Padilla & Tortolero-Blanco, 2020) and can negatively impact the behavior of individuals.

Thus, it is possible to notice that there has been an increase in the amount of time of use of social media, which can satisfy needs for information related to disasters, entertainment and

interpersonal communication. And despite the advantageous role that these media can play in an emergency like Covid-19, their excessive use can have consequences in terms of mental and emotional health, as well as favoring compulsive behaviors.

2.3 Measurement variables and research hypotheses

Although there is evidence of an increase in cases of compulsive use of social media, especially among adolescents, the measurement of this construct still represents a challenge. Van Den Eijnden, Lemmens and Valkenburg (2016) developed an instrument to measure social media disorder (SMD), based on a survey of 2,198 Dutch adolescents. The results of the literature review and instrument validation identified 27 items for the measurement of nine constructs: "concern", "tolerance", "withdrawal", "persistence", "escape", "problems", "disappointment", " displacement" and "conflicts".

Among the constructs, "concern" is measured through items related to directing thoughts towards messages on social networks, even during the performance of other activities; "tolerance" is measured from items related to the need for more frequent use; "withdrawal" is measured from feelings of tension, restlessness, anger and frustration resulting from the impossibility of using social media; "persistence" is measured by unsuccessful attempts to reduce media use; "escape" is measured from the search for the mitigation of negative feelings; "problems" are related to productivity difficulties, insomnia and interpersonal conflicts; "disappointment" relates to lies about the use of media; the "displacement" is related to the less time dedicated to friends, family, hobbies and other activities; and, finally, "conflicts" are measured from the identification of problems in relationships in the school and family environment (Van Den Eijnden, Lemmens, & Valkenburg, 2016).

In the context of the Covid-19 pandemic, the use of social media has also been measured. Rumas et al. (2021) examined factors associated with loneliness and quality of life during the Covid-19 pandemic; Primo (2020) analyzed how online interactions were maintained as a measure of coping with social distancing; Brailovskaia and Margraf (2021) investigated the relationship between overload feelings caused by the Covid-19 pandemic and compulsive use of social media.

In addition to the relationships established by Brailovskaia and Margraf (2021), Youssef et al. (2020) and Rumas et al. (2021), studies such as the one by Mourad et al. (2020) and Ibiapina et al. (2020) made an analysis of the informational use of social media during the Covid-19 pandemic and found the relevance of these media to convey news and guidance to people, but also for the uncontrolled dissemination of conspiracy theories and false information that caused psychological panic, misleading medical advice and economic disruption from lack of supplies.

Regarding economic disruption, it is suggested that compulsive use of social media can lead to panic buying behavior. Naeem (2021) says that social isolation led to exaggerated exposure to advertisements, entertainment and news, which seems to have universalized feelings of stress and uncertainty. These feelings of uncertainty are related to the increase in online shopping and, consequently, panic buying (Lins & Aquino, 2020). As a consequence, Tsao, Raj and Yu (2019) state that panic buying is closely related to supply interruptions in supply chains, resulting from crisis situations such as the one experienced in the pandemic scenario.

In the qualitative study by Naeem (2021), elements related to the relationship between the use of social media and panic buying during the Covid-19 pandemic were identified: the shared uncertainties and insecurities related to the creation and sharing of content about

situations of sick and dead people; purchase as a form of persuasion, since many individuals felt persuaded to buy more products because their peers did so and/or suggested to do so; proof of unavailability of products, given through posts that portrayed the shortage of essential items in the markets; communication from authorities, with behavioral recommendations for coping with the pandemic; the creation of a global logic, based on the observation of what happened between peoples of different origins; and, finally, the opinion of media experts. Furthermore, Naeem (2021) suggested that future research should validate their findings based on quantitative analyzes that would allow generalization. Ahmed et al. (2020) identified that fake news on social media had a significant influence on the relationship between impulsive buying and panic buying. In the present study, the moderating role of the informational use of social media is analyzed, on the relationship between the use of these media and panic buying.

Seeking an instrument to measure panic buying in the context of the Covid-19 pandemic, Lins and Aquino (2020) developed the Panic Buying Scale (PBS), validated from a survey with 393 Brazilians. The study allowed us to understand, among other issues, that panic buying was positively related to impulsive buying. Similarly, Gupta, Nair, and Radhakrishnan (2021) reported the importance of understanding panic drivers for to understand impulsive buying.

Given the above, it was possible to infer a set of hypotheses in this study (Chart 1).

Chart 1
Research hypotheses

Hypothesis	Source
H1. The compulsive use of social media has a positive impact on panic buying	Naeem (2021)
	Lins and Aquino (2020)
H2. Impulsive buying has a positive impact on panic buying	Lins and Aquino (2020)
	Gupta, Nair and Radhakrishnan (2021)
H3.Compulsive use of social media has a positive impact on impulsive buying	Lins and Aquino (2020)
	Gupta, Nair and Radhakrishnan (2021)
	Aragoncillo and Orus (2017)
H4. The informational use of social media moderates the relationship between compulsive social media use and panic buying.	Mourad et al. (2020)
	Ibiapina et al. (2020)
	Ahmed et al. (2020)

Note. Prepared by the authors

The methodological procedures for testing these hypotheses are presented in the next section.

3 Research Methodology

The primary research data were collected from a survey, in online questionnaires. In the first part of the questionnaire, questions about the demographic profile of the sample were included, to identify whether there was a relationship between these characteristics and the phenomenon analyzed, with the items "city" and "state" corresponding to filter questions, to select the respondents from the Triangulo Mineiro and Alto Paranaiba regions. Respondents from this regions were considered for a few reasons: these regions stood out for the proportional number of Covid-19 cases in comparison to other regions in Brazil, reaching 100% occupancy of Intensive Care Unit (ICU) beds in the months of February and March (Rodrigues , 2020); and the towns of these regions adopted measures to face the pandemic, such as closing most economic sectors and curfew at specific times of the day, until April 2021 (Marinho, 2021).

In the second part of the questionnaire, items related to the use of social media were included. Therefore, we aimed to identify: whether the respondent was a user of social media and, if so, which media were most used; the frequency of use before and during the Covid-19 pandemic (Primo, 2020); and whether respondents used social media as a source of information during the pandemic, according to the model created by Mourad et al. (2020). Also in the second part of the questionnaire, the Social Media Disorder (DMS) measurement instrument by Van Den Eijnden, Lemmens and Valkenburg (2016) was fully used, with Cronbach's alpha equal to 0.82. This scale has 27 items, divided into nine dimensions, namely: concern, tolerance, withdrawal, persistence, escape, problems, disappointment, disconnection and conflict. Each of these dimensions was represented by the following acronyms, respectively: PREOC, TOL, AFAST, PERST, FUG, PROB, DEC, DESL, CONFL. All items were translated from English to Portuguese, following the back translation procedures (Behr, 2016).

In the third part of the questionnaire, considering that the results of Lins and Aquino (2020) suggested that impulsive buying was positively related to panic buying, the instrument by Rook and Fisher (1995) called Impulsive Buying Scale (IBS) was used (Cronbach's alpha = 0.88). The model is composed by four items: "I see, I buy"; "I usually buy things without thinking"; "buy now and think about it later"; and "I just buy". Also in the third part of the instrument, to measure panic buying, the work of Lins and Aquino (2020) was used, chosen as a result of previous validation in the context of the Covid-19 pandemic in Brazil. The scale, originally used in Portuguese, had seven items (Cronbach's alpha = 0.90). Both scales were evaluated using a seven-point Likert scale.

After preparing the survey, a pre-test was carried out with five individuals. After the results of this step, it was possible to verify the estimated response time for the instrument (8 to 11 minutes). In addition, a small change was made in the wording of the question related to the Social Media Disorder (DMS) scale by Van Den Eijnden, Lemmens and Valkenburg (2016), in order to clarify that all questions should be answered. Finally, a question was also included to measure the frequency of use before and during the Covid-19 pandemic, which was carried out according to Primo (2020).

The questionnaire was available to the respondents between May and June in 2021 on the authors' social networks: Facebook and WhatsApp. In the end, the questionnaire allowed the collection of valid data from 118 respondents, with no missing values being identified due to the mandatory response in all items of the collection instrument. A non-probabilistic convenience sample was adopted, seeking to evaluate the relationships between the variables, and not to make population inferences.

Regarding data analysis, the following procedures were performed: descriptive statistical analysis, Pearson's correlation, simple linear regression and moderation analysis to test the hypothesis H4. The software called Statistical Package for the Social Sciences (SPSS - version 20) was used for the analysis and, specifically for the test of the hypothesis of the moderator variable (H4), the macro PROCESS for SPSS (version 3.5) was used. The PROCESS macro is a script that allows the calculation of mediation and moderation effects, through the bootstrapping technique in SPSS (Prado, Korelo, & Silva, 2014).

4 Results

The research sample consisted of people aged between 21 and 78 years, with an average age of 40 years. There was a prevalence of female respondents (70.9%) and individuals with a family income between three and twelve national minimum wages (69%). The minimum wage considered in this research was R$1,100 (which was the current minimum wage in 2021).

Regarding marital status, most respondents declared themselves married (49.3%) or single (32.1%).

In addition to the demographic analysis, the frequency was obtained for each item that evaluated: presence on social media, frequency of media use before and during the Covid-19 pandemic, and informational use of social media. Regarding the presence on social media, 99.2% of the participants declared themselves to be users of at least one social media. There was a higher frequency of users who reported using Whatsapp (22%), followed by Instagram (18%), YouTube (17%), Facebook (15%), Telegram (12%), Twitter (10%) and TikTok (6%).

It was identified that 83.9% of the participants classified their use as high (43.2%) or medium (40.7%). If considering the same question for the period after pandemic, 80.6% of respondents stated that the use of social media "increased a lot" (44.9%) or "increased a little" (37.3%). Another 14.4% stated that the use of these media remained the same and 2.5% stated that the use had decreased a lot. For questions related to the use of social media as a source of information during the pandemic, 69.5% of respondents said they used these media "often" and 24.6% said they used them "sometimes". Only six respondents said they never use or rarely use social networks as a source of information.

In addition to the profile of use of social media, we aimed to analyze the frequency of respondents who declared to have compulsive behaviors in these networks. Table 1 shows that, although most respondents have stated a medium or high use of social media, and that the frequency of use of these media has increased in the pandemic period, there is no predominance of compulsive behavior.

Table 1

Compulsive use of social media

Item	No	Yes
(PREOC1) [...Do you often find it hard not to look at messages on social media when you are doing something else (e.g. a work or school project)?]	29,9%	70,1%
(PREOC2) [...Do you regularly find that you can't think of anything else except when you'll be able to use social media again?]	84,6%	15,4%
(PREOC3) [...Do you often sit around waiting until something happens on social media again?]	78,6%	21,4%
(TOL1) [...Do you feel the need to use social media more frequently?]	59,0%	41,0%
(TOL2) [...Do you feel the need to check messages on social media more frequently?]	48,7%	51,3%
(TOL3) [...Do you regularly feel dissatisfied because you wanted to spend more time on social media?]	95,7%	4,3%
(AFAST1) [...Do you often feel tense or restless when you can't see your messages on social media?]	73,5%	26,5%
(AFAST2) [...Do you regularly get angry or frustrated at not being able to use social media?]	86,3%	13,7%
(AFAST3) [...Do you often feel bad when you can't use social media?]	82,9%	17,1%
(PERST1) [... Do you try to reduce social media use, but fail?]	49,6%	50,4%
(PERST2) [...Do you try to spend less time on social media but fail?]	44,4%	55,6%
(PERST3) [...can't stop using social media even though other people have said you should really stop?]	81,2%	18,8%
(FUG1) [... do you regularly use social media to forget about your problems?]	68,4%	31,6%
(FUG2) [... do you usually use social networks so you don't have to think about unpleasant things?]	60,7%	39,3%
(FUG3) [...Do you often use social media to escape from negative feelings?]	65,0%	35,0%

Item	No	Yes
(PROB1) [….often don't pay attention to studies or work because you're using social media?]	61,5%	38,5%
(PROB2) [...Do you regularly don't get enough sleep because you are using social media too late at night?]	74,4%	25,6%
(PROB3) [...Do you regularly argue with others because of your social media use?]	85,5%	14,5%
(DEC1) [...lie to your family or friends about the amount of time you spend on social media?]	93,2%	6,8%
(DEC2) [...Do you regularly hide your social media usage from others?]	92,3%	7,7%
(DEC3) [….do you use social media secretly?]	95,7%	4,3%
(DESL1) [...Do you regularly do not pay attention to the people around you (e.g. family or friends) because you are using social media?]	63,2%	36,8%
(DESL2) [...regularly not interested in hobbies or other activities because you prefer to use social media?]	83,8%	16,2%
(DESL3) [...regularly neglect other activities (e.g. hobbies, sports) because you want to use social media?]	80,3%	19,7%
(CONFL1) [...have serious problems at school or work because you're spending too much time on social media?]	93,2%	6,8%
(CONFL2) [...had a serious conflict with your family or friends because of your social media use?]	96,6%	3,4%
(CONFL3) [...hurt or lost an important friendship or relationship because you are spending too much time on social media?]	97,4%	2,6%

Note. Survey data (2021)

It is possible to verify that the constructs "conflicts" and "disappointment", had a significant amount of negative responses obtained, with percentages above 90%. This shows that most respondents in the sample did not experience interpersonal conflicts due to excessive use of social media and did not lie about the use of these media (Van Den Eijnden & Lemmens; Valkenburg, 2016).

Although most respondents do not adopt compulsive behaviors, values above 50% were obtained for the items "PREOC1" (69%), related to the difficulty of not checking messages received on the networks while performing other daily tasks, such as studies and work; "TOL2" (51%), related to the need to check messages on these networks with an increasing frequency; and "PERST2" (53%), related to failed attempts to reduce the time dedicated to social networks.

Other constructs related to impulsive buying (Rook & Fisher, 1995) and panic buying (Lins & Aquino, 2020) were measured from the mean and standard deviation. It was found that most respondents also did not show impulsive buying and panic buying behaviors, with averages lower than 4 for all items evaluated.

Table 2 displays the Pearson correlation results that indicated a positive relationship between the independent variables, compulsive social media use (SMD) and impulsive buying (IBS) and the dependent variable panic buying (PBS). The coefficients varied between 0.325 and 0.386 with a significant correlation at 1%. It was possible to identify a slightly higher correlation between compulsive social media use and impulsive buying (0.386), than between compulsive social media use and panic buying (0.325).

Table 2
Pearson's Correlation

Correlations				
		SMD	PBS	IBS
SMD	Pearson's Correlation	1	0,361**	0,386**
PBS	Pearson's Correlation	0,361**	1	0,325**
IBS	Pearson's Correlation	0,386**	0,325**	1

Note. Survey data

Regarding the simple linear regression analysis, the prerequisites for its use were verified: analysis of normality and linearity, from the corresponding graphs; Durbin-Watson test, to verify the existence of autocorrelation, as well as the values of its coefficients, t-value and p-value. The Durbin-Watson test value for the model was 1.950, which indicates the absence of residual autocorrelation, since significant autocorrelation is considered with values lower than 1 or higher than 3 (Field, 2009). Table 3 shows the results of the regressions for the hypotheses with the panic buying (PBS) dependent variable.

Table 3

Linear regression results – dependent variable: panic buying (PBS).

Results: Impact of SMD on PBS					
H1. compulsive use of social media → panic buying	Coefficient	Standard error	Statistic t	p-value	Durbin-Watson
	0,732	0,175	4,174	0,000	1,963
	Model summary			ANOVA	
	R	R^2	R^2 adjusted	F	Sig.
	0,361	0,131	0,123	17,424	0,000
Results: Impact of IBS on PBS					
H2. impulsive buying → panic buying	Coefficient	Standard error	Statistic t	p-value	Durbin-Watson
	0,590	0,160	3,695	0,000	1,926
	Model summary			ANOVA	
	R	R^2	R^2 adjusted	F	Sig.
	0,325	0,105	0,098	13,654	0,000

Note. Survey data

From table 3, it can be observed that the values of F equal to 17.424 and 13.654, statistically significantly (p=0.000), led to the rejection of the hypothesis that the coefficients of the independent variables were null. The adjusted R^2 values indicated that 12.3% of the panic buying variance was explained by the compulsive use of social media and that 9.8% of the panic buying variance was explained by the impulsive buying.

With the results referring to the adjustment of the regression models considered adequate, the tests of hypotheses H1 (compulsive use of social media → panic buying) and H2 (impulsive purchase → panic buying) were carried out. Regarding H1, the results indicated support for its validity, considering the positive values of b (b=0.7320), statistically significant (p=0.000). This result corroborates the authors Ahmad and Murad (2020), who identified that social media significantly impact the spread of fear and related panic, which can trigger panic buying. Regarding hypothesis H2, values of b=0.590 and p=0.000 were found, which also confirmed it. Considering that impulsive buying is an unplanned purchase and usually driven by some stimulus (Kazi et al, 2019), it was found that the context of uncertainty, insecurity and fear triggered by the pandemic can lead individuals to buy more than usual. (Lins & Aquino, 2020). This may indicate that individuals who buy impulsively, a characteristic linked to several behavioral factors, are also more prone to panic buying.

To test hypothesis H3 (compulsive use of social media → impulsive purchase), the variable impulsive purchase was considered dependent and the variable compulsive use of social media, independent. The adequacy of the model was also verified by the assumptions of simple linear regression, with Durbin-Watson equal to 2.139. Table 4 demonstrates the regression results.

Table 4

Linear regression results – dependent variable: impulsive buying (IBS).

Resultados: Impacto de SMD sobre IBS					
H3. compulsive use of social media → impulsive buying	Coefficient	Standard error	Statistic t	p-value	Durbin-Watson
	0,430	0,095	4,509	0,000	2,139
	Model summary			ANOVA	
	R	R^2	R^2 adjusted	F	Sig.
	0,386	0,149	0,142	20,332	0,000

Note. Survey data

When impulsive buying is the dependent variable and the use of social media is the independent variable, the F value was equal to 20.33 (p=0.000) and the adjusted R^2 value = 0.1420, indicating that 14.20% of impulsive buying variance is explained by the compulsive use of social media. The values of F, adjusted R^2 and p=0.000 indicated that the model is indicated to measure the relationship between the variables. The values of b=0.43 and p=0.000 also allow confirmation of the hypothesis, in line with the results of Aragoncillo and Órus (2018), Kazi et al. (2019) and Sharma et al. (2018).

For hypothesis H4, a moderation analysis was performed, that means that it was analyzed whether the frequency of use of social media as a source of information (MOURAD et al., 2020), changed the relationship between compulsive use of social media (SMD) and panic buying (PBS). Table 5 shows the results of the analysis, considering a confidence interval of 95%.

Table 5

INFO moderation results

Moderation Analysis Results. Moderator variable: INFO				
Moderator Variable	R^2 adjusted	Coefficient	Standard error	p-value
Interaction SMD x INFO x PBS	0,0087	-0,3829	0,3566	0,2853

Note. Survey data

For the interaction between compulsive use of social media, informational use of media and panic buying, a coefficient equal to -0.3829 was obtained with p=0.2853, which showed that the moderating effect is not statistically significant for the interaction (p>0.05), which leads to the rejection of the hypothesis that informational use of social media moderates the relationship between compulsive use of social media and panic buying. This result differs from previous studies, which confirmed a positive relationship between these variables, as observed in Ahmed et al. (2020).

Some factors can be inferred for H4 to be rejected. The research did not cover all sociodemographic groups homogeneously, for example, in relation to age group, with an average age of 40 years. This characteristic was one of the factors analyzed by Guess et al. (2019), who, when examining the individual-level characteristics associated with sharing fake articles during the 2016 US presidential campaign, identified a strong age effect: on average, users over 65 years old shared nearly seven times more fake news than the younger age group. Thus, although the frequency of informational use of social media was significant, the rejection

of the hypothesis may indicate that most of the sample was not exposed to fake news during the use of these media and/or if exposed, there was no significant influence.

Chart 2
Results of the hypothesis tests

Hypothesis	Result
H1. The compulsive use of social media has a positive impact on panic buying	**Confirmed**
H2. Impulsive buying has a positive impact on panic buying	**Confirmed**
H3. Compulsive use of social media has a positive impact on impulsive buying	**Confirmed**
H4. Informational use of social media moderates the relationship between compulsive social media use and panic buying	**Rejected**

Note. Survey data

5 Conclusion

This article analyzed the relationship between compulsive social media use, impulsive buying and panic buying during the Covid-19 pandemic. In order to achieve the main purpose, a survey was carried out with consumers from the Triangulo Mineiro and Alto Paranaiba, regions that stood out for the high number of cases of Covid-19 among some of Brazil's towns, in March, 2021 (Rodrigues, 2020). Four hypotheses were raised from the literature and analyzed using simple linear regression. Three of the four hypotheses were confirmed and one was rejected.

It was possible to identify from the collected sample that: (H1) the compulsive use of social media had a positive impact on panic buying, confirming the findings of Ahmad and Murad (2020) and Naeem (2021); (H2) impulsive buying had positive impact on panic buying, as in Lins and Aquino's (2020) research, inferring that the context of insecurity, fear and uncertainty led people to consume more; and that (H3) the compulsive use of social media had a positive impact on impulsive buying, demonstrating that the use of social networks can trigger some impulse to buy, as observed by Aragoncillo and Órus (2017), Gupta, Nair and Radhakrishnan (2021) and Lins and Aquino (2020).

The fourth hypothesis was not confirmed, refuting that the informational use of social media moderates the relationship between compulsive use of social media and panic buying (H4). The rejection of this hypothesis may be related to the age of the respondents, with an average age of 40 years, an age group that may be less exposed to fake news when compared to the elderly (Guess et al., 2019).

The study results contribute to the literature, by including social interaction as a variable related to panic buying, as proposed by Lins and Aquino (2020) and by employing a quantitative methodology, as proposed by Naeem (2021). Empirically, it allows reflections on the relevance of supply chain planning in times of crisis, as well as on the development of actions that seek to mitigate negative feelings arising from challenging contexts, such as the Covid-19 pandemic.

The research has as a limitation, its reduced sample and concentrated in specific geographic regions, which mitigates the possibility of generalizing the results found. However, it is assumed that this limitation may represent a relevant opportunity for future research to be carried out in other regions of the country, especially those with better results in the fight against the Covid-19 pandemic. Other research may also focus on the inclusion of variables related to the dissemination of fake news or the effect of variables related to the mental health of consumers, even enabling the exploration of other data analysis techniques, such as Structural Equation Modeling, that makes it possible to explain the relationship between multiple variables, examining their interrelationships. In addition, the analysis of potential moderating

effects of sociodemographic characteristics, such as age group and education, on impulsive buying and panic buying, could be carried out.

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