Panic Buying and Consumer-Brand Relationships

Ran Han

A Thesis in

The JOHN MOLSON SCHOOL

of

Business Master of Science Program

Presented in Partial Fulfilment of the Requirements

for the Master of Science

(Option Marketing)

at Concordia University

Montreal, Quebec, Canada

July 2022

CONCORDIA   UNIVERSITY
School of Graduate Studies

This is to certify that the thesis prepared

By: Ran Han

Entitled: Panic Buying and Consumer-Brand Relationships

and submitted in partial fulfillment of the requirements for the degree of

Master of Science (Option Marketing)

complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the final examining committee:

_____ Chair
Onur Bodur

_____ Examiner
Darlene Walsh

_____ Examiner

_____ Thesis Supervisor(s)
Bianca Grohmann

_____ Thesis Supervisor(s)

Approved by _____
        Darlene Walsh   Chair of Department or Graduate Program Director

_____

Kathlean Boies   Dean of Faculty

ABSTRACT

Panic Buying and Consumer–Brand Relationships

Ran Han

Due to COVID-19, panic buying has spread around the world; thus, we need to have a better understanding of this phenomenon. Previous research has focused on the antecedents of panic buying. However, there has been a lack of research on how the consequences of panic buying impact consumer–brand relationships. More research has explored the impacts of negative emotions on consumer–brand relationships than the impacts of positive emotions (Khatoon & Rehman, 2021). This study explores the mediation effect of evoked post purchase positive emotions on the relationship between panic buying and brand relationships. The results of a survey of 401 Canadians 18 years old or above showed a positive relationship between panic buying and consumer–brand relationships and that positive emotions mediate this relationship. The findings of this article improve researchers' and brand marketers' understanding of the panic-buying phenomenon and the customer–brand relationship.

Acknowledgements

Table of Contents

Table of Contents

List of Figures

List of Tables

Introduction

Worldwide panic buying was one of the results of the COVID-19 outbreak (Billore & Anisimova, 2021). Panic has been defined as a sudden and intense feeling of fear (Beck, 1996). The fear of the pandemic continued with lack of a certain effective cure. Meanwhile, further outbreaks of new variants of COVID-19 emerged, and governments took actions such as quarantines, mask protection, and social distancing. These conditions and initiatives resulted in panic buying. Panic buying has been defined as "a phenomenon of a sudden increase in buying of one or more essential goods in excess of regular need provoked by adversity, usually a disaster or an outbreak, resulting in an imbalance between supply and demand" (Arafat et al., 2020, p. 289).

Thus far, limited research on panic buying has been conducted. Existing literature has mainly focused on the antecedents of panic buying (e.g., Billore & Anisimova, 2021; Keane & Neal, 2021), such as scarcity of time and products (Islam, 2021). However, few are related to the consequences of panic buying. In particular, there are no studies that evaluate the impact of panic buying in a consumer–brand relationship context. This article aims to investigate the relationship between panic buying and brand relationships.

This article introduces positive emotion as a mediator between panic buying and brand relationships. After examining how consumers interact with brands during a pandemic, the insight into the panic-buying phenomenon will become more complete and in-depth. The contribution of this article to the marketing literature is the extension of existing panic-buying research to a consumer–brand relationship setting. The influence of positive emotion will provide insight into the impact of panic buying's consequences on consumer–brand relationships. This article contributes to managerial practice by highlighting that managers should pay more attention to enhancing brand relationships during panic buying, as the brand relationship will be distinctly shaped during such an experience, and that supply-chain managers should ensure good supplies during a pandemic.

Theoretical Background

Billore and Anisimova (2021) argued that panic buying could not be fully explained by existing consumer models (e.g., the theory of planned behaviour and the theory of reasoned action). Some studies have generated external and internal antecedents. From an external perspective, Keane and Neal (2021) suggested that government measures, such as restrictions, lead to panic buying. The overload of ambiguous information from local, national, and global digital media results in difficulty for customers to behave routinely and reasonably, as they are afraid that demand will be greater than the limited supply of stock and the production of necessities, which mediates panic buying (Mitchell et al., 2005).

From an internal perspective, fear and anxiety during a pandemic lead to people feeling a lack of control (Bonneux & Van Damme, 2006) and to a perceived scarcity of time and products (Islam, 2021). Panic buying occurs as a responsible behaviour. Moreover, a battle plays in customers' minds between intelligent judgements and emotional influences; whichever wins will direct customers' behaviours (Slovic et al., 2004). As a result, the fear of a lack of control is attributed

to panic-buying behaviour. To regain control and maintain the necessary living conditions while the world experiences a pandemic, panic buying mainly focuses on utilitarian products, such as household and medical products (Chen et al., 2017). Meanwhile, to recover from sadness, customers are also seen purchasing hedonic products (e.g., M&M's and video games; Garg & Lerner, 2013).

Prentice et al. (2022) investigated the primary sensation responses after panic buying: security and guilt. Customers start to behave more responsibly by rethinking their buying frequency, types, and quantity (Rubin et al., 2009). Altruistic behaviour can also be demonstrated after panic buying: People donate surplus and essential products to charity, the elderly, and the disabled in their neighbourhood (Knotek et al., 2020).

This study extends prior investigations to the impact of panic buying on the strength of customer–brand relationships. Evoked emotions from panic-buying behaviour have been noted and proposed as mediators between panic-buying behaviour and the strength of consumer–brand relationships. Emotions direct consumers' evaluations after their consumption experiences (Izard, 1991). Schwarz and Clore (1983) also noted that emotion possesses vital information to help people make judgements and then instruct their behaviours. As a result, their commitment to a brand relies on the information provided by evoked post-panic-buying emotions. The need to strengthen the principles of emotions' influence is vital, as emotions shape customers' intentions and behaviours toward brands.

The existing studies on panic buying are mainly related to its antecedents, and no work has been done in a consumer–brand relationship context. Meanwhile, consumers' positive emotions resulting from successful panic buying have not been explored in the panic-buying literature. In order to fill this gap and strengthen the understanding of the panic-buying phenomenon from a marketing managerial aspect, importance is attached to positive emotions evoked through the panic-buying experience, and their influence on consumer–brand relationships is verified. This study addresses the research question of whether successful panic buying leads to positive emotions, which in turn positively influence the strength of consumer-brand relationships.

Relevant previous literature on panic buying and behaviour is presented in Table 1.

Figure 1
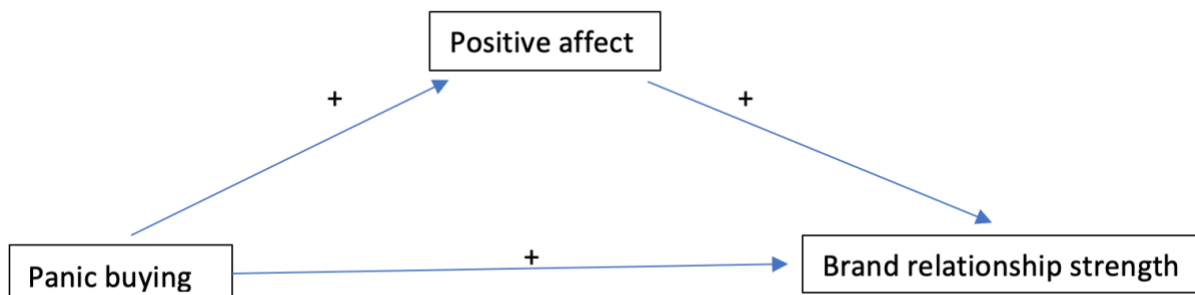*Conceptual Framework of the Effects of Successful Panic Buying*

Table 1

Previous Literature on Panic Buying

Reference	Antecedent	Independent Variable	Dependent Variable	Mediator	Moderator	Findings
Arafat et al. (2020)	Fear of scarcity, losing control, insecurity, social learning, and anxiety		Panic buying			Antecedents of panic buying.
Sim et al. (2020)			Panic buying			The explanations for panic buying are uncertainty of the duration, not coping with the stressful situation, loss of control, and social pressures.
Sailer et al. (2022)		Information seeking	Panic behaviour	Medical knowledge and trust in medicine		Medical knowledge and trust in medicine help people to avoid panic behaviour.
Zheng et al. (2021)		Potential supply disruption risk	Panic buying	Social learning behaviour		Social learning behaviour enhances panic buying.
Keane and Neal (2021)	Government policies and internal movement restrictions in the initial stage		Panic buying			Both domestic and international virus transmission lead to panic buying.
Li et al. (2020)		Spread of online rumours	Panic buying		Distance to epicentre	The spread of online rumors will enhance panic buying, and the farther from the epicentre, the more common panic buying is.
Prentice et al. (2022)			Panic buying			Product and time scarcity significantly increase panic buying.

Thomson et al. (2005) stated that when consumers suffer from external stress, they seek objects for physical and psychological protection. In a recent context, people have reacted to the horror and uncertainty that the pandemic has brought by panic buying essential household products and any items that can provide warmth, which may enhance the strength of the brand relationship.

Meanwhile, Prentice et al. (2022) specifically identified guilt, a subemotion of fear (Shaver et al., 1987), as a post-panic-buying consequence. Prentice et al. (2022) also found a sense of security to be the other consequence of panic buying. In the design of their study, they tried to rule out the influences of guilt and sense of security on the relationship between panic buying and brand relationships.

If products that consumers prefer are out of stock, consumers without a strong consumer–brand relationship will switch to alternative products, and loyal customers will, for example, switch stores and continue seeking their preferred products (Emmelhainz et al., 1991). However, there is a peak point at which loyal consumers will refuse to make further efforts and will settle for an alternative product (Breivik & Thorbjørnsen, 2008). Moreover, when faced with urgency, consumers intend to switch brands, rather than switching stores and making more effort to find the preferred brand (Emmelhainz et al., 1991). When this happens, customers meet their needs, which also evokes positive emotions. To measure positive emotion, the Positive and Negative Affect Schedule (PANAS) scale (Watson et al., 1988) was introduced, wherein "affect is the collective term for describing *feeling states* like emotions and moods" (Batson et al., 1992). The conceptual framework for this study is shown in Figure 1.

This study's hypotheses are as follows:

H1: The relationship between panic buying and brand relationship strength is positive.

H2: The relationship between panic-buying behaviour and the strength of a brand relationship is mediated by positive affect.

Method

Sample

A pilot test was first conducted among 33 members of AskingCanadians (https://www.askingcanadians.com/; male = 45.5%, female = 54.5%, age range was 21–84 years, mean age = 48.64 years, SD = 15.756 years). The questionnaire was then fully launched on the AskingCanadians website.

A total of 401 participants were recruited to answer the questionnaire. The sample size of 400 was determined using Yamane's formula, at a 95% confidence interval (CI) level, based on a population of 30,760,000 Canadians who are 18 years old or above. Participants were people who had experience of buying shampoo or skincare products. The online survey company AskingCanadians was used to collect data. The data were collected in March 2022. The ages ranged from 18 to 87 years, with a mean age of 47.36 years (SD = 16.469). The average numbers of bottles of shampoo and skincare products that the participants bought per year were 5.89 (*SD*

= 6.095) and 5.64 (*SD* = 6.676), respectively. Other characteristics of the sample are shown in Table 2.

Table 2
Sample Characteristics

Variable	Group	Frequency	Percentage (%)
Gender	Male	194	48.4
	Female	206	51.4
	Other	1	0.2
Household income	Less than $50,000	72	18.0
	$50,000 to less than $75,000	69	17.2
	$75,000 to less than $100,000	81	20.2
	$100,000 to less than $150,000	62	15.5
	$150,000 to less than $250,000	36	9.0
	$250,000 or more	15	3.7
	Don't know	5	1.2
	Prefer not to answer	61	15.2
Level of education	High school diploma	76	19.0
	Professional certificate	93	23.2
	Bachelor's degree	152	37.0
	Master's degree	68	17.0
	Doctorate degree	12	3.0

Procedures

Participants were first directed to an informed consent form. Once they had agreed to participate, they were directed to the questionnaire. Participants were asked to consider the purchase of one product category (i.e., shampoo or skincare products) when answering the measures to test the hypothesized model. The shampoo category was selected because Omar et al. (2011) showed that people have brand loyalty to shampoo brands, which means that customers and shampoo brands have brand relationships. The same applies to skincare products (Tao-hong, 2011). Furthermore, shampoo and skincare products (i.e., toiletries) are essential during lockdowns (Saintives, 2020).

Measures

The questionnaire was based on a review of previous literature. Islam et al. (2021) tested panic buying using two constructs: impulsive buying and obsessive-compulsive behaviour. These scales were introduced to the present study. The questionnaire used the scale of positive affect, which was the subscale of the PANAS scale (Watson et al., 1988). Moreover, as brand relationship quality indicated relationship strength from the consumers' perspective (Pentina et

al., 2013), brand relationship strength was measured by using scales from Breivik and Thorbjørnsen (2008). As discussed, guilt and a sense of security needed to be ruled out as explanations of the relationship between panic buying and brand relationships. Guilt was measured using scales from Marschall et al. (1994), and a sense of security was measured using the sense of agency scale from Tapal et al. (2017). All constructs used are detailed in Table 3.

Because past research identified urge to buy (i.e., the tendency to buy impulsively) as a personality trait that influences "spontaneous, unreflective, immediate, and kinetical" buying behaviour (Peck & Childers, 2006, p. 765), a measure of urge to buy was included in the study to account for this personality trait. Urge to buy was measured using Verhagen and Dolen's (2011) scale. Since it did not emerge as a significant moderator of the effects explored in this research, it is not discussed further.

Table 3

Measures

Constructs	Reference	Scale Items
Panic buying	Ridgway et al. (2008)	1. My closet has unopened shopping bags in it. 2. Others might consider me a shopaholic. 3. I buy something for myself almost every day during the pandemic. 4. Much of my life centres on buying things during the pandemic. 5. I buy things I do not need. 6. I buy things I did not plan to buy. 7. I buy things without thinking. 8. I am a bit reckless about what I buy. 9. I consider myself an impulse purchaser.
Positive affect	Watson et al. (1988)	1. Interested 2. Distressed 3. Excited 4. Upset 5. Strong 6. Guilty 7. Scared 8. Hostile 9. Enthusiastic 10. Proud 11. Irritable 12. Alert 13. Ashamed 14. Inspired 15. Nervous 16. Determined 17. Attentive 18. Jittery

		19. Active 20. Afraid
Urge to buy	Verhagen and Dolen (2011)	1. I experienced a number of sudden urges to buy things. 2. On this trip, I saw a number of things I wanted to buy even though they were not on my shopping list. 3. I experienced strong urges to make unplanned purchases on this trip. 4. On this trip, I felt a sudden urge to buy something.
Brand relationship strength	Breivik and Thorbjørnsen (2008)	1. I feel my relationship with this brand is exclusive and special. 2. I have feelings for this brand that I do not have for many other brands. 3. I feel that this brand and I were really meant for each other. 4. This brand says a lot about the kind of person I am. 5. This brand's image is consistent with how I would like to see myself. 6. This brand helps me make a statement about what is important to me in life. 7. This brand and I have a lot in common. 8. It would be a shame if I had to start over from scratch with another brand from this category. 9. Every time I use this brand, I am reminded of how much I like it. 10. I have really gotten used to having this brand around. 11. I feel like this brand actually cares about me. 12. This brand really listens to what I have to say. 13. I feel as though this brand really understands me. 14. This brand is dependable and reliable. 15. This brand has always been good to me. 16. If this brand makes a claim or promise about its products, it is probably true. 17. I feel like I know what to expect from this brand. 18. I will stay with this brand through good times and bad. 19. I am willing to make small sacrifices in order to keep using this brand. 20. I have made a pledge of sorts to stick with this brand.
Perceived control	Tapal et al. (2017)	1. I am in full control of what I do. 2. I am just an instrument in the hands of someone else. 3. My actions just happen without my intention. 4. I am the author of my actions. 5. The consequences of my actions feel like they do not logically follow my actions.

		6.	My movements are automatic—my body simply makes them.
		7.	The outcomes of my actions generally surprise me.
		8.	Things I do are subject only to my free will.
		9.	The decision of whether and when to act is within my hands.
		10.	Nothing I do is actually voluntary.
		11.	While I am in action, I feel like I am a remote-controlled robot.
		12.	My behaviour is planned by me from the very beginning to the very end.
		13.	I am completely responsible for everything that results from my actions.
Guilt	Marschall et al. (1994)	1.	I feel good about myself.
		2.	I want to sink into the floor and disappear.
		3.	I feel remorse or regret.
		4.	I feel worthwhile or valuable.
		5.	I feel small.
		6.	I feel tension about something I have done.
		7.	I feel capable or useful.
		8.	I feel like I am a bad person.
		9.	I cannot stop thinking about something bad I have done.
		10.	I feel proud.
		11.	I feel humiliated or disgraced.
		12.	I feel like apologizing or confessing.
		13.	I feel pleased about something I have done.
		14.	I feel worthless or powerless.
		15.	I feel bad about something I have done.

Note. The scale anchors for all constructs' scale items were 1 = *strongly disagree* and 7 = *strongly agree*.

Factor Analysis

Exploratory factor analysis (EFA) was conducted to determine the number of factors to extract. Furthermore, the results showed that the data of the measures for panic buying and urge to buy loaded onto one component as intended. Meanwhile, the data of the measures for perceived control and guilt loaded onto two components, as some items in these scales ran in the opposite direction. Those items were reverse coded. In the EFA of the PANAS scale items, the items loaded onto three factors rather than the two that were expected. As for measuring brand relationship strength, the data loaded onto two components rather than one. The last components of the PANAS and brand relationship strength scales explained 5.364% and 9.962% of the variance, respectively, with eigenvalues of 1.073 and 1.992, respectively.

Reliability Analysis

Reliability analysis was conducted for all variable measure scales using SPSS software. Reverse-coded data of the perceived control and guilt measure scales were used. Moreover, the reliability of PANAS was analyzed separately with the items on PANAS–positive affect and PANAS–negative affect subscales. The results indicated reliability (see Table 4).

Table 4
Reliabilities

Variable	Number of items	Cronbach's alpha
Panic buying	9	.935
Positive affect	10	.948
Negative affect	10	.958
Urge to buy	4	.920
Brand relationship strength	20	.967
Perceived control	13	.852
Guilt	15	.919

Correlation Analysis

The correlations between the variables included in this study are summarized in Table 5. The high correlation between panic buying and urge to buy proved the convergent validity of the two measures.

Table 5
Correlations

Variable	Panic buying	Brand relationship strength	Positive affect	Perceived control	Guilt
Panic buying	—				
Brand relationship strength	.282**	—			
Positive affect	.406**	.551**	—		
Perceived control	−.540**	−.162**	−.311**	—	
Guilt	.475**	.003	.134**	−.636**	—
Urge to buy	.780**	.324**	.421**	−.451**	.418**

** Correlation is significant at the two-tailed level.

Hypotheses Tests

The hypotheses were tested using an SPSS PROCESS model (Model 4, 10,000 bootstrap samples; Hayes, 2018). In order to rule out guilt and perceived control, in addition to positive affect, as potential explanations of the relationship between panic buying and brand relationship

strength, they were added as parallel mediators to the model. The results are summarized in Table 6.

Hypothesis 1 was supported because the total effect was significant, with a value of .2898 (t = 5.8755, p < .05, 95% CI [.1928, .3867]). Thus, panic buying significantly predicted brand relationship strength. As panic buying increased, brand relationship strength increased.

The results of the indirect effect in the output examined Hypothesis 2, in which an indirect relationship between panic buying and brand relationship strength existed. The estimated indirect effect of panic buying on brand relationship strength through positive affect was equal to .2128, 95% bootstrap CI [.0750, .2411]. In other words, positive affect mediated the relationship between panic buying and brand relationships. Thus, Hypothesis 2 was supported.

The output of the model also indicated that guilt mediated the relationship between panic buying and brand relationship strength and ruled out perceived control. The estimated indirect effect of panic buying on brand relationship strength through guilt was equal to −.0693, 95% bootstrap CI [−.1252, −.0185]. This is compelling evidence that a meaningful mediation effect exists. Meanwhile, the p-value of the indirect effect through perceived control was .0000, 95% bootstrap CI [−.0531, .0774]. Therefore, perceived control was not a significant mediator.

Table 6
Summary of Results

Hypothesis number	Hypothesis description	Result
Hypothesis 1	Panic buying predicted brand relationship strength.	Supported
Hypothesis 2	Positive affect mediated the relationship between panic buying and brand relationship strength.	Supported

General Discussion

The results show a positive relationship between panic buying and consumer–brand relationships, and positive emotions mediate this relationship. This suggests that successful panic buying may have positive consequences for consumers (i.e., positive affect) and brands (i.e., stronger consumer-brand relationships).

Theoretical Contributions

As pandemics do not occur frequently, limited research in this context exists. This study makes several theoretical contributions to the understanding of the panic-buying phenomenon. First, as far as is known, this is the first study to extend the existing panic-buying research from general consequences to a consumer–brand relationship setting during a pandemic. Existing research has mainly focused on the antecedents, such as social and psychological antecedents (Bonneux &

Van Damme, 2006; Keane & Neal, 2021). The present research explored the positive relationship between panic buying and brand relationships.

While existing studies have focused on the influence of negative emotions on brand relationships (Khatoon & Rehman, 2021), the present research introduced positive emotions in the influence process to provide insight into the impact of panic buying on consumer–brand relationships. Although a mediating role of guilt was observed in this study, positive affect resulting from successful panic buying emerged as a significant mediator of the path linking successful panic buying and consumer-brand relationship.

Managerial Contributions

It is a severe challenge for supply-chain managers during pandemic lockdowns to fulfill customers' demands with sufficient supply. Normally, they have applied an efficient system to guarantee stock, which is friendly for manufacturers, distributors, and retailers. However, in the unusual time of a pandemic, they should ensure a timely and speedy restock of supplies according to the needs of customers during different phases of the pandemic by collecting information from customers and by unobtrusive communication with brands' marketing managers, which will help to maintain brand relationships.

Managers should pay attention to enhancing brand relationships during a panic-buying phenomenon, as the brand relationship will be shaped distinctly during such an experience. Thus, during a pandemic, such as COVID-19, managers should take into consideration potential changes in the strength of brand relationships. If the existing retail channels are not effective in making consumers' preferred brand available in context in which panic buying occurs, brand managers should consider making preferred brands available through alternative channels, such as brand web sites or direct sales, to meet the demand of customers and ensure supply. If preferred brands are available when consumers engage in panic buying, stronger consumer-brand relationships likely result.

Limitations and Future Research

COVID-19 is a global crisis affecting billions of people. However, this research only selected Canadians as the research sample and explored shopping behaviours during the first government intervention. Many countries were hit by COVID-19 to varying degrees, and different governments applied different policies according to their local situations and cultures, which may have led to panic buying under varying mechanisms. Moreover, different phases of the pandemic may have experienced different types of customer needs. To generate a more generalizable and comprehensive understanding of this topic, future research should extend the sample to more countries and different pandemic phases.

This research only explored the situation in which customers successfully bought products of their preferred or alternative brand. During the COVID-19 lockdown, many people failed to obtain what they needed; it is worth conducting further research to investigate the impact of panic buying of alternative brands (if the preferred brand is not available), or unsuccessful attempts at panic buying (due to unavailability of brands within a product category) on brand

relationships. A related question pertains to how to remedy weakened consumer-brand relationships resulting from unavailability of preferred brands once a pandemic is over.

This research used a questionnaire and was correlational in nature. It is therefore not appropriate to draw inferences regarding a causal relationship between panic buying and consumer–brand relationships. Nonetheless, the results of this research are promising and should ideally be validated using an experimental paradigm. Of importance in this context would be to capture the effects of various levels of panic related to buying situations on brand relationships, and the mediating roles of other potential variables, such as anxiety.

References

Albert, N., & Thomson, M. (2018). A synthesis of the consumer-brand relationship domain: using text mining to track research streams, describe their emotional associations, and identify future research priorities. *Journal of the Association for Consumer Research*, *3*(2), 130–146. https://doi.org/10.1086/696825

Arafat, S. M. Y., Kar, S. K., Marthoenis, M., Sharma, P., Hoque Apu, E., & Kabir, R. (2020). Psychological underpinning of panic buying during pandemic (covid-19). *Psychiatry Research*, *289*, Article 113061. https://doi.org/10.1016/j.psychres.2020.113061

Batson, C. D., Shaw, L. L., & Oleson, K. C. (1992). Differentiating affect, mood, and emotion. In M. S. Clarke (Ed.), *Emotion* (pp. 294–326). Sage.

Beck, C. T. (1996). A concept analysis of panic. *Archives of Psychiatric Nursing*, *10*(5), 265–75.

Billore, S., & Anisimova, T. (2021). Panic buying research: a systematic literature review and future research agenda. *International Journal of Consumer Studies*, *45*(4), 777–804. https://doi.org/10.1111/ijcs.12669

Bonneux, L., & Van Damme, W. (2006). An iatrogenic pandemic of panic. *British Medical Journal*, *332*(7544), 786–788.

Breivik, E., & Thorbjørnsen, H. (2008). Consumer brand relationships: an investigation of two alternative models. *Journal of the Academy of Marketing Science: Official Publication of the Academy of Marketing Science*, *36*(4), 443–472. https://doi.org/10.1007/s11747-008-0115-z

Chen, C. Y., Lee, L., & Yap, A. J. (2017). Control deprivation motivates acquisition of utilitarian products. *Journal of Consumer Research*, *43*(6), 1031–1047. https://doi.org/10.1093/jcr/ucw068

Emmelhainz, M. A., Stock, J. R., & Emmelhainz, L. W. (1991). Consumer responses to retail stock-outs. *Journal of Retailing*, *67*(2), 138–147.

Garg, N., & Lerner, J. S. (2013). Sadness and consumption. *Journal of Consumer Psychology*, *23*(1), 106–113. https://doi.org/10.1016/j.jcps.2012.05.009

Islam, T., Pitafi, A. H., Arya, V., Wang, Y., Akhtar, N., Mubarik, S., & Xiaobei, L. (2021). Panic buying in the covid-19 pandemic: a multi-country examination. *Journal of Retailing and Consumer Services*, *59*, Article 102357.

Izard, C. E. (1991). *The psychology of emotions*. Plenum Press.

Keane, M., & Neal, T. (2021). Consumer panic in the covid-19 pandemic. *Journal of Econometrics*, *220*(1), 86–105.

Khatoon, S., & Rehman, V. (2021). Negative emotions in consumer brand relationship: a review and future research agenda. *International Journal of Consumer Studies*, *45*(4), 719–749. https://doi.org/10.1111/ijcs.12665

Knotek, E. S., Schoenle, R. S., Dietrich, A. M., Kuester, K., Müller Gernot J, Myrseth, K. O. R., & Weber, M. (2020). Consumers and covid-19: a real-time survey. *Economic Commentary (Federal Reserve Bank of Cleveland)*, *2020-08*, 1–6. https://doi.org/10.26509/frbc-ec-202008

Li, Q., Chen, T., Yang, J., & Cong, G. (2020). Based on computational communication paradigm: simulation of public opinion communication process of panic buying during the covid-19 pandemic. *Psychology Research and Behavior Management*, *13*, 1027–1045.

Marschall, D. E., Sanftner, J. L., & Tangney, J. P. (1994). *The State Shame and Guilt Scale (SSGS)*. George Mason University.

Mitchell, V.-W., Walsh, G., & Yamin, M. (2005). Towards a conceptual model of consumer confusion. *Advances in Consumer Research*, *32*, 143–150.

Omar, M., Nguyen, T. D., Barrett, N. J., & Miller, K. E. (2011). Brand loyalty in emerging markets. *Marketing Intelligence & Planning*, *29*(3), 222–232.

Pentina, I., Gammoh, B. S., Zhang, L., & Mallin, M. (2013). Drivers and outcomes of brand relationship quality in the context of online social networks. *International Journal of Electronic Commerce*, *17*(3), 63–86.

Peck, J., & Childers, T. L. (2006). If I touch it I have to have it: Individual and environmental influences on impulse purchasing. *Journal of business research*, *59*(6), 765-769.

Prentice, C., Quach, S., & Thaichon, P. (2022). Antecedents and consequences of panic buying: The case of COVID-19. *International Journal of Consumer Studies*, *46*(1), 132–146.

Ridgway, N. M., Kukar-Kinney, M., & Monroe, K. B. (2008). An expanded conceptualization and a new measure of compulsive buying. *Journal of Consumer Research*, *35*(4), 622–639. https://doi.org/10.1086/591108

Rubin, G. J., Amlôt, R., Page, L., & Wessely, S. (2009). Public perceptions, anxiety, and behaviour change in relation to the swine flu outbreak: cross sectional telephone survey. *BMJ: British Medical Journal*, *339*(7713), 156.

Sailer, M., Stadler, M., Botes, E., Fischer, F., & Greiff, S. (2022). Science knowledge and trust in medicine affect individuals' behavior in pandemic crises. *European Journal of Psychology of Education*, *37*(1), 279–292.

Saintives, C. (2020). Guilt online vs. offline: What are its consequences on consumer behavior? *Journal of Retailing and Consumer Services*, *55*, Article 102114.

Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology, 45*(3), 513–523. https://doi.org/10.1037/0022-3514.45.3.513

Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: further exploration of a prototype approach. *Journal of Personality and Social Psychology*, *52*(6), 1061–1086.

Sim, K., Chua, H. C., Vieta, E., & Fernandez, G. (2020). The anatomy of panic buying related to the current COVID-19 pandemic. *Psychiatry Research*, *288*, Article 113015.

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2004). Risk as analysis and risk as feelings: some thoughts about affect, reason, risk, and rationality. *Risk Analysis*, *24*(2), 311–322.

Tao-hong, C. (2011, May 6–8) *A study on consumers' skincare brand relationship quality—Based on Nanning's investigation* [Conference presentation]. 2011 International Conference on E-Business and E-Government (ICEE), Shanghai, China.

Tapal, A., Oren, E., Dar, R., & Eitam, B. (2017). The sense of agency scale: a measure of consciously perceived control over one's mind, body, and the immediate environment. *Frontiers in Psychology*, *8*, 1552–1552. https://doi.org/10.3389/fpsyg.2017.01552

Thomson, M., MacInnis, D. J., & Whan Park, C. (2005). The ties that bind: Measuring the strength of consumers' emotional attachments to brands. *Journal of consumer psychology*, *15*(1), 77-91.

Verhagen, T., & van Dolen, W. (2011). The influence of online store beliefs on consumer online impulse buying: a model and empirical application. *Information & Management*, *48*(8), 320–327. https://doi.org/10.1016/j.im.2011.08.001

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the panas scales. *Journal of Personality and Social Psychology*, *54*(6), 1063–1070.

Zheng, R., Shou, B., & Yang, J. (2021). Supply disruption management under consumer panic buying and social learning effects. *Omega*, *101*, Article 102238.

Appendix A – Instructions and Measures

At the beginning of the first lockdown due to COVID-19, people were rushing to purchase necessities, and some products were out of stock at the time.

Please think back to the beginning of the COVID-19 lockdown and answer the following questions regarding your purchases at the time?

> Did you buy a product from the following categories?
> Shampoo   (yes, no)
> Skin care   (yes, no)
>
> (if selected yes [shampoo], direct to the following question regarding shampoo)
>
> What brand of shampoo did you buy at the time?   _____
>
> (if selected no [shampoo], and yes [skin care], direct to the following question regarding skin care, otherwise terminate)
>
> What brand of skin care product did you buy at the time?   _____
>
> (if selected yes [shampoo], and yes [skin care], direct to the following question either shampoo or skin care randomly)
>
> (if selected no [shampoo], and no [skin care], terminate)
>
> To what extent was the brand you bought your preferred brand?
> anchored 1 = not at all preferred, 7 = my preferred brand

Please answer the following questions considering the purchase of shampoo [skin care] at the time of the first COVID-19 lockdown.

Measures and scale items

Panic buying

Here are a number of situations that may or may not apply to you. Please indicate the extent to which you agree or disagree with the following statements (from "1 Strongly disagree" to "7 Strongly agree), considering the purchase of shampoo (skin care) at the time of the first COVID-19 lockdown.

Anchored 1 = strongly disagree, 7 = strongly agree

1) My closet has unopened shopping bags in it.
2) Others might consider me a shopaholic.
3) I buy something for myself almost every day during the pandemic.
4) Much of my life centers around buying things during the pandemic.
5) I buy things I don't need.

6) I buy things I did not plan to buy.
7) I buy things without thinking.
8) I am a little about reckless about what I buy.

9) I consider myself an impulse purchaser.

Positive Affect / Negative Affect (PANAS)

Here are some statements about feelings. Please indicate the extent to which your experience of buying shampoo (skin care) made you feel at the time of the first COVID-19 lockdown

Anchored 1 = strongly disagree, 7 = strongly agree

The purchase made me feel …

1) Interested
2) Distressed
3) Excited
4) Upset
5) Strong
6) Guilty
7) Scared
8) Hostile
9) Enthusiastic
10) Proud
11) Irritable
12) Alert
13) Ashamed
14) Inspired
15) Nervous
16) Determined
17) Attentive
18) Jittery
19) Active
20) Afraid

Urge to Buy

Here are 4 statements of thoughts and feelings, that you may agree or disagree. Please describe them thinking of the purchase of shampoo [skin care] at the time of the first COVID-19 lockdown
Anchored 1 = strongly disagree, 7 = strongly agree

1) I experience a number of sudden urges to buy things.
2) On this trip, I saw a number of things I wants buy even though they were not on my shopping list.

3) I experienced strong urges to make unplanned purchases on this trip.
4) On this trip, I felt a sudden urge to buy something.

Brand Relationship Strength

Here are some statements of feelings and thoughts about your relationship with the brand of shampoo (skin care) you bought. Please indicate the extent to which you agree or disagree with those statements, considering the time of the first COVID-19 lockdown.

Anchored 1 = strongly disagree, 7 = strongly agree

1) I feel my relationship with this brand is exclusive and special.
2) I have feelings for this brand that I don't have for many other brands.
3) I fell that this brand and I were really 'meant for each other'.
4) This brand says a lot about the kind of person I am.
5) This brand's image is consistent with how I'd like to see myself.
6) This brand helps me make a statement about what is important to me in life.
7) This brand an I have a lot in common.
8) It would be a shame if I had to start over from scratch with another brand from this category.
9) Every time I use this brand, I am reminded of how much I like it.
10) I have really gotten used to having this brand around.
11) I feel like this brand actually cares about me.
12) This brand really listens to what I have to say.
13) I feel as though this brand really understands me.
14) This brand is dependable and reliable.
15) This brand has always been good to me.
16) If this brand makes a claim or promise about its products, it is probably true.
17) I feel like I know what to expect from this brand.
18) I will stay with this brand through good times and bad.
19) I am willing to make small sacrifices in order to keep using this brand.
20) I have made a pledge of sorts to stick with this brand.

Perceived control

Here are some statements of feelings and statements. Thinking back to this shampoo (skincare) purchase at the time of the first COVID- 19 lockdown, please indicate your agreement with the following statements.

Anchored 1 = strongly disagree, 7 = strongly agree

1) I am in full control of what I do.
2) I am just an instrument in the hands of somebody or someone else. (Reverse coded).
3) My actions just happen without my intention. (Reverse coded).
4) I am the author of my actions.

5) The consequences of my actions feel like they don't logically follow my actions. (Reverse coded).
6) My movements are automatic—my body simply makes them. (Reverse coded).
7) The outcomes of my actions generally surprise me. (Reverse coded).
8) Things I do are subject only to my free will.
9) The decision whether and when to act is within my hands.
10) Nothing I do is actually voluntary. (Reverse coded).
11) While I am in action, I feel like I am a remote-controlled robot. (Reverse coded).
12) My behavior is planned by me from the very beginning to the very end.
13) I am completely responsible for everything that results from my actions.

Guilt

Here are some statements of feelings and statements. Thinking back to this shampoo (skincare) purchase at the time of the first COVID- 19 lockdown, please indicate the extent to which you agree with the following statements.

Anchored 1 = strongly disagree, 7 = strongly agree

1) I feel good about myself. (Reverse coded).
2) I want to sink into the floor and disappear.
3) I feel remorse, regret.
4) I feel worthwhile, valuable. (Reverse coded).
5) I feel small.
6) I feel tension about something I have done.
7) I feel capable, useful. (Reverse coded).
8) I feel like I am a bad person.
9) I cannot stop thinking about something bad I have done.
10) I feel proud. (Reverse coded).
11) I feel humiliated, disgraced.
12) I feel like apologizing, confessing.
13) I feel pleased about something I have done. (Reverse coded).
14) I feel worthless, powerless.
15) I feel bad about something I have done.

Usage and Demographic Questions

We will now ask you a few questions about yourself.

Please state your frequency of buying shampoo. How many bottles of shampoo do you buy in a regular year?   _____

What is your age?   _____

What is your gender?

Male
Female
Other, please state: _____

What is your monthly household income?

1) 0-2000 dollars
2) 2000- 4000 dollars
3) 4000- 6000 dollars
4) 6000 dollars and above.

What is the highest level of education you have achieved?

1) High school diploma
2) Professional certificate
3) Bachelor's degree
4) Master's degree
5) Doctorate

Where do you live?
1) British Columbia
2) Alberta
3) Saskatchewan
4) Manitoba
5) Ontario
6) Quebec
7) New Brunswick
8) Nova Scotia
9) Prince Edward Island
10) Newfoundland & Labrador
11) Yukon
12) Northwest Territories
13) Nunavut
14) Outside of Canada

Appendix B - PROCESS Model 4

```
Run MATRIX procedure:

****************** PROCESS Procedure for SPSS Version 4.0 ****************

          Written by Andrew F. Hayes, Ph.D.        www.afhayes.com
     Documentation available in Hayes (2022). www.guilford.com/p/hayes3


*************************************************************************
Model  : 4
    Y  : Consumer-brand relationship (CBR)
    X  : Panic buying (PB)
   M1  : Positive affect (PA)
   M2  : Perceived control (PC)
   M3  : Guilt (GT)

Sample
Size:  401

*************************************************************************
OUTCOME VARIABLE:
 Positive affect (PA)

Model Summary
          R       R-sq       MSE          F        df1        df2          p
      .4060      .1649     1.9852    78.7614     1.0000   399.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.1874      .1456    15.0274      .0000     1.9012     2.4735
PB            .4593      .0518     8.8748      .0000      .3575      .5610

*************************************************************************
OUTCOME VARIABLE:
 Perceived control (PC)

Model Summary
          R       R-sq       MSE          F        df1        df2          p
      .5396      .2911      .7085   163.8731     1.0000   399.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     6.2449      .0870    71.8169      .0000     6.0740     6.4159
PB           -.3958      .0309   -12.8013      .0000     -.4566     -.3350

*************************************************************************
OUTCOME VARIABLE:
 Guilt (GT)

Model Summary
          R       R-sq       MSE          F        df1        df2          p
      .4754      .2260     1.0412   116.5298     1.0000   399.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
```

```
constant      1.5847       .1054     15.0332       .0000      1.3775      1.7920
PB             .4046       .0375     10.7949       .0000       .3309       .4783


**************************************************************************
OUTCOME VARIABLE:
 Consumer-brand relationship (CBR)

Model Summary
          R        R-sq         MSE           F         df1         df2           p
      .5669       .3214      1.3395     46.8852      4.0000    396.0000       .0000

Model
              coeff          se           t           p        LLCI        ULCI
constant     2.5480       .6084      4.1882       .0000      1.3520      3.7441
PB            .1331       .0545      2.4422       .0150       .0260       .2402
PA            .4634       .0419     11.0467       .0000       .3809       .5458
PC           -.0332       .0815      -.4071       .6841      -.1935       .1271
GT           -.1712       .0669     -2.5575       .0109      -.3028      -.0396

************************* TOTAL EFFECT MODEL ***************************
OUTCOME VARIABLE:
 Consumer-brand relationship (CBR)

Model Summary
          R        R-sq         MSE           F         df1         df2           p
      .2822       .0796      1.8031     34.5217      1.0000    399.0000       .0000

Model
              coeff          se           t           p        LLCI        ULCI
constant     3.0830       .1387     22.2248       .0000      2.8103      3.3557
PB            .2898       .0493      5.8755       .0000       .1928       .3867

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************


Total effect of X on Y
     Effect          se           t           p        LLCI        ULCI
      .2898       .0493      5.8755       .0000       .1928       .3867

Direct effect of X on Y
     Effect          se           t           p        LLCI        ULCI
      .1331       .0545      2.4422       .0150       .0260       .2402

Indirect effect(s) of X on Y:
           Effect      BootSE    BootLLCI    BootULCI
TOTAL       .1567       .0419       .0750       .2411
PA          .2128       .0324       .1528       .2803
PC          .0131       .0332      -.0531       .0774
GT         -.0693       .0272      -.1252      -.0185

********************** ANALYSIS NOTES AND ERRORS **********************


Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  10000
  ------ END MATRIX -----
```