

Predictors of Online Compulsive Buying During the COVID-19 Pandemic

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Abstract

Online shopping has been steadily growing in popularity, especially with the COVID-19 pandemic. Compulsive buying (CB) is estimated to affect roughly 5% of the population. The relationship between online CB and several variables including personality, online use and mindfulness requires further investigation. A total of 534 individuals from university ($n = 334$) and online communities ($n = 200$) participated in a study examining the role of various personality factors (i.e., hopelessness, anxiety sensitivity, impulsivity, and sensation seeking), internet usage and mindfulness on online CB. The potential for mindfulness scores to mediate the relationship between high impulsivity and online CB was also investigated. Analyses indicated that increased internet use was the strongest predictor of online CB, followed by high impulsivity, high anxiety sensitivity and lower nonreactivity mindfulness scores. In addition, lower nonreactivity was found to partially mediate the relationship between high impulsivity and online CB. These findings suggest that personality and mindfulness interventions may be useful in the context of reducing online CB.

Keywords: compulsive buying, personality, impulsivity, mindfulness, online

Predictors of Online Compulsive Buying During the COVID-19 Pandemic

Around the world, countries have been implementing measures such as lockdowns and physical distancing to restrict the spread of the novel coronavirus disease (COVID-19; Kaplan et al., 2020). These restrictions appear to have resulted in increased internet use and online shopping, with upward of a 70% increase in internet use (Beech, 2020). Recently, Statistics Canada reported e-commerce sales hitting a record of \$3.9 billion in May 2020, a 99.3% increase since February 2020 (Aston et al., 2020). New online behaviours may develop as customers become more accustomed to the accessibility, consumer anonymity, and 24-hour convenience of online shopping, especially during a global pandemic (Zheng et al., 2020). Even before COVID-19 was prevalent in Canada, Equifax Canada indicated that the average consumer's non-mortgage debt, which includes credit cards, loans, and lines of credit, was approximately \$23,800 (The Canadian Press, 2020). Hence, increased online shopping can lead to financial and legal problems, but also psychological distress, interpersonal conflict, and poorer academic grades (Christenson et al., 1994; Harvanko et al., 2013; McElroy et al., 1994). These consequences can be even more severe in compulsive buyers and with online shopping prevalence increasing, the need for more research surrounding online shopping addiction is needed.

Compulsive buying (CB), originally termed oniomania, or “an uncontrollable desire to buy things” (Kraepelin, 1915, as cited in Harvanko et al., 2013), was clinically documented for the first time in the early 20th century but was not given much attention until the late 1980s (O’Guinn & Faber, 1989). O’Guinn and Faber (1989) described compulsive buyers as people who achieve gratification through the buying process, rather than from the actual utilization of the purchased items. Some characteristics of CB include irresistible, intrusive, and uncontrollable

buying or urges to buy that are often associated with purchasing more than can be afforded, usually of unnecessary items, and losing track of time while shopping (McElroy et al., 1994). The impulses to buy are often poorly resisted and accompanied by feelings of mounting tension, that may only be relieved by shopping (Harvanko et al., 2013). The pleasurable feeling initiated by the act of buying is followed by a sense of relief or gratification from the release of tension; however, these positive sensations are often cut short due to secondary consequences that can arise, such as debt accumulation and social conflict (Harvanko et al., 2013).

Black (2001) estimated the prevalence of CB to be between 1.8–8.1% of the population with a majority (80–95%) of those meeting CB criteria consisting of women. Later studies found similar prevalence rates of 5.8% in the United States and 6.9% in Germany, with no significant differences between men and women (Koran et al., 2006; Mueller et al., 2010). A recent meta-analysis of CB, based on the responses of 32,000 participants from 16 different countries, reported an estimated pooled prevalence of 5% (Maraz et al., 2016). In addition, there was a greater proportion of studies reporting higher rates of CB in females than of studies concluding that no gender differences exist (Maraz et al., 2016). Harvanko and colleagues (2013) suggested that these gender differences could be due to clinical studies being based on community samples, which lead to higher prevalence rates in females because women tend to be more likely to publicly admit that they enjoy shopping. There are currently no longitudinal studies of CB, but research suggests that it may be a chronic or recurring condition (Christenson et al., 1994). Taken together, with the relatively high prevalence rate, results highlight the need for further research and a better understanding of CB, especially in the context of online shopping behaviour.

CB is currently listed as a “shopping addiction” in the appendix of the *Diagnostic and Statistical Manual of Mental Disorders fifth edition* (DSM-5; American Psychiatric Association [APA], 2013) and, due to insufficient current research to establish diagnostic criteria, CB is not yet recognized as a distinct mental disorder (APA, 2013). Many experts believe CB fits best within a behavioural addiction framework (Maraz et al., 2015). Similar to individuals with substance-related disorders, some compulsive buyers have reported overpowering urges to buy, repetitive loss of control over spending, feelings of “high” when shopping, and a negative emotional state that emerges when the individual is not shopping. Such factors resemble craving, drug-seeking behaviour, and withdrawal symptoms characteristic of substance use disorders (Piquet-Pessôa et al., 2014). In addition, when comparing CB characteristics to the diagnostic criteria for substance use disorders, there are several shared features, including a preoccupation with the behaviour and repeated unsuccessful attempts to cut down or stop the behaviour (Black, 2007; Trotzke et al., 2015). Others have characterized CB as an impulse control disorder, similar to pathological gambling, as CB is marked by irresistible compulsions to buy that are beyond the individual’s control (Maraz et al., 2015). An example of an obsessive-compulsive aspect of CB would be the mounting tension that is associated with the urge to buy (Maraz et al., 2015). Although the debate as to whether CB is an addictive or compulsive disorder is still ongoing, more evidence appears to point to CB as a behavioural addiction with impulsive characteristics (Williams & Grisham, 2011).

The Substance Use Risk Profile Scale (SURPS) is a model that measures various personality risk factors that have been found to increase the risk of substance use and misuse (Woicik et al., 2009). The SURPS assesses four personality dimensions: hopelessness, anxiety sensitivity, impulsivity, and sensation seeking (Woicik et al., 2009). Hopelessness involves a

tendency towards pessimistic views of the future (Brunelle et al., 2009). Anxiety sensitivity is the fear of the experienced physical sensations in association with anxiety (Gallagher et al., 2017). Impulsivity is characterized by the desire to seek rewards leading to a loss of control over one's behaviour, often despite negative long-term consequences (Woicik et al., 2009). This differs from sensation seeking which refers to a yearning for excitement and novel experiences (Woicik et al., 2009). Due to the similarities in the profiles of individuals with substance-related addictions and those with CB, the SURPS model may be relevant to understanding CB behaviour; however, to my knowledge, the SURPS has never been used to investigate the relationship between its four personality dimensions and CB.

Substance use behaviours have been found to be under both positive and negative reinforcement pathways (Schlauch et al., 2015). Related to the SURPS, both hopelessness and anxiety sensitivity are personality factors that are associated with using substances to cope with an individual's negative affect and are potential mediators for the negative reinforcement pathway associated with substance misuse (Schlauch et al., 2015; Woicik et al., 2009). Negative affect is also a common precursor to CB behaviours (Billieux et al., 2008). Indeed, depression is one of the most prevalent comorbid disorders in individuals with CB. Specifically, Müller and colleagues (2019) measured depressive symptoms using the Patient Health Questionnaire and found a significant positive correlation between CB and depression ratings. This relationship was also supported by Duroy and colleagues' (2018) findings that the mean scores on negative affect were significantly higher in individuals with CB in comparison to those without CB. Given that one of the core components of depression is hopelessness (Assari & Lankarani, 2016), it is likely that hopelessness, as measured by the SURPS, would also be associated with CB.

The other negative reinforcement pathway, anxiety sensitivity, may also be related to CB. Although, few studies have examined the relationship between anxiety sensitivity and CB, Gallagher and colleagues (2017) found that both the physical (e.g., fear of experiencing a heart attack) and cognitive (e.g., fear of loss of control) aspects of anxiety sensitivity were predictive of the severity of CB. In addition, in a sample of individuals seeking treatment for CB, generalized anxiety scores were significantly correlated with CB ($r = .41$; Müller et al., 2019). Specifically, it has been posited that feelings of anxiety may lead to CB and increased willingness to spend (i.e., a precursor of CB), whereas stress and depression seem to co-occur with feelings of guilt after a purchase is made (i.e., a consequence of CB; Gallagher et al., 2017).

In contrast to hopelessness and anxiety sensitivity, impulsivity and sensation seeking are reported to be positively reinforcing pathways in that the individual may engage in a behaviour because it is inherently rewarding (Schlauch et al., 2015). Impulsivity is the most explored construct in relation to CB and may contribute to the disorder through quick, rash decision-making with little regard past the present moment (Potenza & Taylor, 2009). Williams and Grisham (2011) investigated the relationship between CB and four distinct aspects of impulsivity: negative urgency, positive urgency, lack of perseverance, and lack of premeditation. Both positive and negative urgency were associated with CB, indicating that individuals with CB may engage in impulsive behaviour (e.g., shopping) following both positive and negative events in their lives. Lack of perseverance/premeditation may also influence one's ability to ignore urges to buy while lacking the ability to consider potential outcomes of their actions as both dimensions were also positively related to CB scores (Williams & Grisham, 2011). Maraz and colleagues (2015) also found a significant mean difference in impulsivity scores, with a medium/large effect size (Cohen's $d = .64$), when compulsive buyers were compared to a control

group of non-compulsive buyers. A behavioural test involving a go/no-go task that was modified to include images of consumer products also showed compulsive buyers to be significantly more impulsive (Cohen's $d = .58$) than controls (Hague et al., 2016). Furthermore, impulsivity is a facet of disinhibition, which scores were also found to be significantly different between individuals with CB versus those without (Duroy et al., 2018). In fact, the means on disinhibition of those with CB were double that of those without CB (Duroy et al., 2018). Further support for CB and impulsivity is found in a study of individuals with bipolar disorder. Specifically, impulsivity and CB were strongly correlated in participants ($r = .69$; Richardson et al., 2019). In sum, the extent of research reporting significant findings between CB and impulsivity demonstrates the contribution of impulsivity in CB behaviours.

There is less research investigating sensation seeking's relationship with CB and the findings, which are reported, are mixed. Williams and Grisham (2011) examined sensation seeking as a facet of impulsivity and found no significant correlations between sensation seeking and CB. However, in another study in which sensation seeking was assessed as a separate entity from impulsivity using the Brief Sensation Seeking Scale, a significant difference between the mean scores of compulsive buyers compared to non-compulsive buyers was found (Cohen's $d = .49$; Maraz et al., 2015). Similarly, another study found sensation seeking scores to be significantly different among those that scored below average, moderately, and above average on CB, with mean sensation seeking scores following an upward trend across these respective groups (Rodríguez-Villarino et al., 2006). In sum, it appears that when sensation seeking is captured as a unique construct, separate from impulsivity, it is more likely to be found to be positively associated with CB. Altogether, when examining the four personality dimensions of the SURPS, there is the most support for a relationship between CB and impulsivity, as well as

hopelessness and anxiety sensitivity. Given that the SURPS has not currently been used in relation to CB, it is worthy of examining how this personality model of risk for substance-related misuse would also be associated with CB. This is especially pertinent because prevention and intervention strategies focused on developing coping skills matched to the SURPS traits have been found to reduce the risk of initiating substance use and decreasing substance use in individuals who use substances (Conrod, 2016). Therefore, it may be possible to adapt such personality-matched coping skills to the context of CB.

In addition to personality, there are other psychological variables that may be associated with CB. Mindfulness is described as awareness and focused attention to one's actions, as well as their surroundings (Brown & Ryan, 2003). A widely used scale, the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) was developed using an exploratory factor analysis of 112 items derived from five other mindfulness questionnaires. A five-factor mindfulness model emerged consisting of observing, describing, acting with awareness, nonjudging, and nonreactivity (Baer et al., 2006). Observing is described as noticing and attending to internal (e.g., bodily sensations) and external stimuli (e.g., sounds; Baer et al., 2004). Describing involves paying attention to the present moment and labeling observed phenomena (Baer et al., 2004). Acting with awareness requires being in the present or partaking in activities with undivided attention (Baer et al., 2004). Nonjudging involves accepting and withholding evaluations over inner experiences in the present moment, including refraining from applying labels, such as good/bad or right/wrong (Baer et al., 2004). Lastly, nonreactivity includes avoiding impulsive reactions to inner experiences (Baer et al., 2006).

The relationship between mindfulness and CB is a growing area of research that has already begun to gain support. Williams and Grisham (2011) found that lower mindful

attentional awareness, which is being attentive to the present throughout daily-life, was significantly related to CB and to deficits relating to impulsivity. They also reported that the CB group scored significantly lower on mindfulness than the control group (Williams & Grisham, 2011). Similar findings were reported in relation to individuals with bipolar disorder, where a significant inverse relationship between mindfulness and CB occurred (Richardson et al., 2019). Both studies measured mindfulness using the Mindful Attention Awareness Scale (Brown & Ryan, 2003), which was one of the scales used to develop the FFMQ. Also, an increase in mindful attention to the present moment may influence individuals to make more thoughtful decisions rather than acting impulsively (Baer, 2003), which may explain why mindfulness is related to CB. In fact, Lakey and colleagues (2007) found that during gambling tasks, pathological gamblers who made more self-controlled decisions were more mindful of the possible rewards and punishments relating to their choices on a risk-taking card game. Therefore, these participants performed better on the card game. Hence, mindfulness may reduce negative gambling outcomes by allowing individuals to weigh risks when decision-making is occurring. This may then lead to less severe gambling outcomes (Lakey et al., 2007).

A similar relationship may exist between CB and mindfulness, in which mindfulness acts as a potential mediator between CB and impulsivity. The potential mediational role of mindfulness in explaining the established relationship between impulsivity and CB has never been directly examined; however, it is plausible that impulsivity may be associated with CB because impulsive individuals do not pay attention to internal (e.g., mood) or external (e.g., debt) stimuli in their environment and overly focus on the potential short-term rewards associated with CB. If this is supported, then mindfulness could be a target for CB treatment, as mindfulness is a capacity that can be developed and increased through interventions (Benson et al., 2014). A CB

intervention named the Stopping Overshopping treatment found that their intervention, which in part focused on increasing mindfulness, led to a significant decrease in CB in comparison to the control group who had yet to receive treatment (Benson et al., 2014). It is therefore worthy of examining if mindfulness is associated with CB and whether it contributes indirectly to the relationship between CB and impulsivity.

Currently, the majority of CB research has focused on CB in a traditional retail environment and has somewhat neglected compulsive internet buying; however, compulsive internet use has been the object of research since the mid-1990s (Mitchell, 2000). Increased internet usage may promote online CB. Bhatia (2019) reported a statistically significant positive relationship between internet addiction and online CB, which parallels the findings of other studies that have also found significant positive relationships between the two variables (Lee et al., 2016; Mueller et al., 2011). In addition, increased overall CB behaviour may increase the chance of online CB. Lee and colleagues (2016) found that offline CB had a strong positive relationship with CB online. Müller and colleagues (2019) also found that one third of a sample of compulsive buyers seeking treatment also met criteria specifically for online CB. It is crucial to continue investigating the role of online CB now more than ever, as more people are choosing to shop online rather than to physically enter a retail store because they prefer the convenience, as well as for the potential to relieve any physical or mental pressures (Bhatia, 2019), especially during COVID-19. Also, advancements in smartphone shopping applications may also contribute to CB tendencies by allowing shoppers to buy things quicker and more easily, which may further contribute to online CB (Bhatia, 2019).

The first goal of the current study was to investigate the role of several psychological variables in online CB. Specifically, the contribution of the SURPS personality model,

mindfulness, and online use behaviours will be examined in relation to online CB. Previous research shows promising support for the hypothesis that impulsivity will be the strongest predictor of online CB, but it was also predicted that higher anxiety sensitivity and hopelessness, as well as lower mindfulness will be significant predictors of online CB. This study was the first to examine comprehensively the role of these variables in online CB behaviours. A secondary goal of the research was to examine the potential for mindfulness scores to mediate the relationship between high impulsivity and high online CB. This research goal has not been examined previously and has the potential to inform CB treatment because mindfulness can be practiced and improved upon, whereas impulsivity as a stable personality trait may be more difficult to target (Costa & McCrae, 1992).

Method

Participants

A total of 590 individuals participated in the current study. Data cleaning eliminated responses that were completed in an unrealistic time frame ($n = 42$) and/or were partially (i.e., less than 50%) completed ($n = 14$), resulting in a final sample of 534 participants. Participants for this study were recruited from two populations. First, a community sample ($n = 200$) was recruited through online advertisements on social media (e.g., Reddit [www.reddit.com], Facebook shopping support groups [www.Facebook.com], etc.). The other subset of participants ($n = 334$) consisted of undergraduate students from psychology courses at the University of New Brunswick in Saint John, New Brunswick, Canada. The only inclusion criterion to participate in the study was that each participant had to be 18 years of age or older. The sample was primarily female (84.1%), Caucasian (87.6%), student (71.2%) and from Atlantic Canada (80.5%). The age of the respondents ranged from 18–76 years of age, with an average age of 27 years ($SD =$

12.04). Additionally, the majority (67.4%) of the sample's total personal income was less than \$24,999 (see Table 1 for demographic descriptives).

Measures

Demographics

An internally made demographics questionnaire (see Appendix A) was used to assess basic demographic characteristics including: age, gender, ethnicity, primary occupation, education, and personal income.

SURPS

The SURPS (Woicik et al., 2009; see Appendix B) is a 23-item scale that measures the personality traits of Hopelessness (seven items; e.g., "I feel that I'm a failure"), Anxiety Sensitivity (five items; e.g., "I get scared when I'm too nervous"), Impulsivity (five items; e.g., "I usually act without stopping to think") and Sensation Seeking (six items; e.g., "I like doing things that frighten me a little"). Using a 4-point Likert scale, respondents were asked to indicate the degree to which they felt each statement related to themselves, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Therefore, increased scores on each subscale indicates greater endorsement of the respective personality trait. Convergent and discriminant validity were assessed by correlating the SURPS with other established personality measures (Woicik et al., 2009). Each SURPS subscale had the strongest correlation with personality instruments that measured the same construct (Woicik et al., 2009). For example, Hopelessness was strongly correlated with the Beck Hopelessness Scale, but was not significantly correlated with Anxiety Sensitivity or Sensation Seeking (Woicik et al., 2009). The SURPS traits appear relatively stable. Krank and colleagues (2011) surveyed 1,139 adolescents and found test-retest reliabilities (*rs*)

ranging between .43 (Hopelessness) and .65 (Impulsivity) over a 12-month period. The internal reliability of the instrument has also been established (Woicik et al., 2009), with Cronbach's alpha coefficients ranging between .64 (Sensation Seeking) and .86 (Hopelessness). In the present study, the SURPS showed acceptable to good internal consistency, with Cronbach's alpha scores ranging between .69 (Anxiety Sensitivity) and .88 (Hopelessness).

Compulsive Internet Use Scale

The Compulsive Internet Use Scale (CIUS; Meerkerk et al., 2009; see Appendix C) is a 14-item questionnaire that assesses problematic internet use. Participants responded regarding their online behaviours using a 4-point Likert scale that ranges between 0 (*never*) and 4 (*very often*). Potential scores range from 0 to 56, with higher scores indicating greater compulsive internet use. A study consisting of a large sample ($N = 16,925$) indicated that the CIUS had high internal consistency ($\alpha = .89$), as well as high correlations with the Online Cognition Scale, an instrument measuring maladaptive internet use cognitions, demonstrating good concurrent and criterion validity (Meerkerk et al., 2009). In the present study, the CIUS possessed excellent internal consistency with a Cronbach's alpha of .93.

FFMQ

The FFMQ (Baer et al., 2006; see Appendix D) is a commonly used scale to assess the tendency for mindful attention and awareness throughout everyday life (Christopher et al., 2012). The FFMQ is composed of 39-items that measure five facets of mindfulness: Observing (eight items; e.g., "When I'm walking, I deliberately notice the sensations of my body moving"), Describing (eight items; e.g., "I'm good at finding words to describe my feelings"), Acting with Awareness (eight items; e.g., "I find it difficult to stay focused on what's happening in the

present”), Nonjudging of Inner Experience (eight items; e.g., “I make judgments about whether my thoughts are good or bad”) and Nonreactivity to Inner Experience (seven items; e.g., “I perceive my feelings and emotions without having to react to them”). Participants were asked to rate the degree to which they felt each statement described what is generally true about them on a 5-point Likert scale ranging from 1 (*never or very rarely true*) to 5 (*very often or always true*). Higher scores indicate more mindfulness, with each facet’s scores ranging from 8 to 40, except for Nonreactivity which ranges from 7 to 35.

Christopher and colleagues (2012) reported that the FFMQ had good to excellent internal consistency ranging between .84 and .93 (i.e., Observing $\alpha = .84$, Describing $\alpha = .91$, Acting with Awareness $\alpha = .90$, Nonjudgment $\alpha = .93$, and Nonreactivity $\alpha = .86$). The convergent validity of the FFMQ is supported by the significant positive correlation between the FFMQ and the Satisfaction with Life Scale ($r = .52$), measuring life satisfaction, and with the Trait Meta-Mood Scale ($r = .64$), which evaluates emotional intelligence. In the present study, the FFMQ showed acceptable to excellent internal consistency with Cronbach’s alpha scores ranging between .67 and .90 for all subscales, except for the describing subscale ($\alpha = .52$) which was therefore excluded from further analysis. Furthermore, the FFMQ total score showed good internal consistency ($\alpha = .76$).

Bergen Shopping Addiction Scale-Modified

The Bergen Shopping Addiction Scale-Modified (BSAS; Andreassen et al., 2015; see Appendix E) consists of 28 items and is divided into seven shopping addiction criteria, each consisting of four items: Salience (e.g., “Shopping/buying is the most important thing in my life”), Mood Modification (e.g., “I shop in order to feel better”), Conflict (e.g., “I often end up in arguments with others because of shopping/buying”), Tolerance (e.g., “I spend more and more

time shopping/buying”), Relapse (e.g., “I have tried to cut down on shopping/buying without success”), Withdrawal (e.g., “I become stressed if obstructed from shopping/buying things”), and Problems (e.g., “I shop/buy so much that it has caused economic problems”). Respondents answer using a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). This scale was modified to refer to online buying specifically similar as in previous studies (Müller et al., 2019), where statements such as “I shop in order to feel better” were replaced with “I shop online in order to feel better”.

The internal consistency of the instrument is satisfactory ($\alpha = .87$) and the BSAS is strongly correlated with the Compulsive Buying Scale (Andreassen et al., 2015), demonstrating convergent validity. This scale also assesses several core addiction criteria leading it to have good content validity within an addiction framework. In the presented study, the BSAS had excellent internal consistency, with a Cronbach’s alpha of .97.

Procedure

The current study was advertised as examining the role of personality and other psychological variables in internet shopping. Two data recruitment procedures were undertaken. Undergraduate psychology students were informed about the study on SONA, an online registration system, that included a link to access the study on Qualtrics (<https://www.qualtrics.com>), which is an online survey platform. Other participants from the community were informed about the study through advertisements on social media and internet snowballing (e.g., Facebook groups for compulsive buyers, Reddit, Instagram [[www.instagram](http://www.instagram.com)], Twitter [www.twitter.com]). These advertisements also contained the link to the survey on Qualtrics. When the survey was opened, an online consent form (see Appendix F) appeared, outlining the purpose of the study, the participants’ right to withdraw at any point and the

compensation opportunities. The contact information of the researchers and the Research Ethics Board of the University of New Brunswick's approval number (see Appendix G) was also provided. Informed consent was obtained by the participants checking a box stating that they agreed to participate and that they were 18 years of age or older at the time of completion.

The study was composed of five questionnaires that were all presented in a randomly generated order and took most participants 10 to 15 minutes to complete. Following the questionnaire, participants were presented with the opportunity to receive half of a bonus point to put towards a University of New Brunswick Saint John psychology course if applicable, or the opportunity to enter a draw for one of two \$25.00 Amazon gift cards. All information collected for the purpose of compensation could not be linked to the participants' survey responses as they were contained in a separate, unlinked survey.

Results

Preliminary Analyses

All analyses were conducted using the Statistical Package for the Social Sciences software, version 27 (SPSS 27). First, the data was inspected for missing values and responses that were completed in an unreasonably short amount of time. In total, data from 56 respondents was excluded from the data set due to the aforementioned reasons. Multicollinearity was examined by looking at the tolerance and VIF values which indicated no collinearity issues. The data was also checked for normality and linearity assumptions by examining histograms and P-P plots. The outcome variable, online CB, was normally distributed and there was a linear relationship between the residuals and the predicted score on the dependent variable. Lastly, multivariate outliers were assessed by examining Mahalanobis distance values. These values

were saved in the data file and were assessed using the chi-square distribution table with a cut-off value of 29.59, $p < .001$ (Tabachnick & Fidell, 2013). According to this cut-off, there was one multivariate outlier in the data set. Given the minimal impact that a single outlier can pose on a data set of the current size, no further action was taken.

Gender differences were examined using t -tests and significant gender differences were found on two subscales of the SURPS, Anxiety Sensitivity ($M_{\text{males}} = 12.13$ vs. $M_{\text{females}} = 13.72$; $t(520) = -5.10$, $p < .001$) and Sensation Seeking ($M_{\text{males}} = 16.44$ vs. $M_{\text{females}} = 14.34$; $t(520) = 4.84$, $p < .001$), in addition to gender differences on the outcome variable, CB scores ($M_{\text{males}} = 42.23$ vs. $M_{\text{females}} = 54.59$; $t(515) = -5.50$, $p < .001$). A statistical trend for females to have higher CIUS (i.e., compulsive internet use) scores also emerged ($M_{\text{males}} = 36.77$ vs. $M_{\text{females}} = 39.43$; $t(515) = -1.87$, $p = .06$). In sum, females were more likely to have elevated anxiety sensitivity and CB scores but males had higher Sensation Seeking scores. In addition to gender differences, differences in occupation status (students vs. non-students) were also found to have a significant impact on CB scores ($M_{\text{students}} = 50.65$ vs. $M_{\text{non-students}} = 57.59$; $t(518) = -2.75$, $p = .01$). In sum, non-students (i.e., employed, retired, etc.) scored significantly higher in CB behaviour when compared to participants who reported their primary occupation as being students. In light of these significant differences, both gender and occupation status were controlled for in the subsequent analyses.

Descriptive Data

The means and standard deviations of all the variables of interest can be found in Table 1. The mean scores on the SURPS subscales (i.e., Hopelessness $M = 13.73$, $SD = 3.80$; Anxiety Sensitivity $M = 13.47$, $SD = 2.63$; Impulsivity $M = 10.25$, $SD = 2.67$; and Sensation Seeking $M = 14.66$, $SD = 3.65$) were consistent with those reported by Woicik and colleagues (2009) using a

sample of 390 undergraduate students (i.e., Hopelessness $M = 13.7$, $SD = 4.1$; Anxiety Sensitivity $M = 12.2$, $SD = 2.8$; Impulsivity $M = 11.1$, $SD = 2.7$; Sensation Seeking $M = 15.5$, $SD = 3.0$). In the current sample, compulsive internet use scores ($M = 24.18$, $SD = 11.5$) were much higher compared to Lopez-Fernandez and colleagues' (2019) cross-cultural validation study of the CIUS ($M = 16.03$, $SD = 10.7$). The FFMQ mean scores were also similar between de Bruin and colleagues' (2012) study consisting of 451 first year undergraduate students and the present study (Observing $M = 26.46$, $SD = 4.3$ vs. $M = 27.39$, $SD = 5.5$; Acting with Awareness $M = 25.29$, $SD = 4.6$ vs. $M = 24.65$, $SD = 4.6$; Nonreactivity $M = 22.07$, $SD = 3.6$ vs. $M = 21.07$, $SD = 4.7$; Nonjudging $M = 27.65$, $SD = 5.8$ vs. $M = 23.11$, $SD = 6.7$, respectively). It is not possible to contrast BSAS scores to other studies as the validation study (Andreassen et al., 2015) did not report mean scores and no other suitable comparisons with other samples could be made given that the BSAS is a relatively new instrument.

The Impact of Personality, Internet Use and Mindfulness on CB

A hierarchical multiple regression was used to examine the role of personality, internet use and mindfulness on CB, while controlling for gender and occupation status. The first block contained the variables of gender and occupation, while the remaining variables (i.e., Hopelessness, Anxiety Sensitivity, Impulsivity, Sensation Seeking, internet use, Observing, Acting with Awareness, Nonjudging of Inner Experience and Nonreactivity to Inner Experience) were entered together in the second block. The overall model was significant $F(11, 506) = 24.24$, $p < .001$ and accounted for 33.6% of the total variance in CB scores. It was determined that block 1 was statistically significant $F(2, 506) = 11.37$, $p < .001$, and accounted for 3.9% of the variance. The final model was also significant $F(11, 506) = 24.24$, $p < .001$ and explained the remaining 29.7% of the variance. Both non-student status ($\beta = .214$, $p < .001$) and female gender

($\beta = .090, p = 0.02$) were predictors of CB. Other significant predictors of CB included higher Anxiety Sensitivity ($\beta = .109, p = .01$), Impulsivity ($\beta = .166, p < .001$), and internet use ($\beta = .394, p < .001$) as well as lower Nonreactivity scores ($\beta = -.086, p = .05$). No other variables were significant contributors to the model (see Table 2).

The Mediating Role of Nonreactivity on the Relationship Between Impulsivity and CB

A bias-corrected bootstrap mediation analysis using 5,000 samples was conducted via the SPSS macro version 3 developed by Hayes (2017) to examine both the direct relationship between impulsivity and CB, as well as the indirect relationship through one of the five facets of mindfulness, nonreactivity, which was the only mindfulness dimension which emerged as predictive of CB in the hierarchical regression (see Figure 1). A significant direct or indirect relationship is indicated when the 95% confidence interval does not cross zero. The direct relationship from impulsivity to CB was positive and significant 95% CI [.0261, .0455], indicating that those high in impulsivity are more likely to score higher on CB. In addition, the indirect relationship through Nonreactivity was also significant 95% CI [.0023, .0097], indicating that Nonreactivity partially mediated the relationship between impulsivity and CB.

Discussion

The first purpose of this study was to examine the contributions of several psychological variables in online CB, specifically personality, mindfulness, and online use behaviours. The personality model examined, the SURPS, had previously been validated with substance users. In the current study, it was used to investigate whether the four personality dimensions of the SURPS may also contribute to compulsive shopping. Hence, this is the first study to explore the SURPS model in CB. A second goal of this study was to investigate how mindfulness may

impact CB, particularly whether mindfulness mediates the relationship between impulsivity and CB, which to my knowledge, has not been explored in previous research. This goal was of particular interest because mindfulness can be practiced and improved upon, making it a possible treatment for CB.

The hierarchical multiple regression conducted in the current study revealed compulsive internet use to be the biggest predictor of online CB. As mentioned earlier, the CIUS mean score from this study was much higher than that reported in a previous study, which had a sample of 4,000 participants from 15 countries (Lopez-Fernandez et al., 2019). Higher self-reported compulsive internet use scores in the current study may be a result of more time being spent online due to the COVID-19 pandemic. Similarly, a recent study in China reported a 46.8% increase in the prevalence of internet addiction as well as participants being more likely to report spending more hours on the internet since the onset of COVID-19 (Sun et al., 2020). Spending more time on the internet increases the likelihood of developing compulsive internet use behaviours (Lee et al., 2016), which may explain the elevated mean scores on the CIUS that were reported in the current study. Consequently, spending more time on the internet could increase the likelihood of CB, as reported in previous studies (e.g., Bhatia, 2019; Lee et al., 2016; Mueller et al., 2011). However, the question remains whether it is more time online that is leading to an increased risk of CB, or if it is the opposite, where individuals who engage in CB consequently report spending more time online. To elucidate this relationship, a longitudinal study would be needed, which is a current gap in the literature.

Statistical analyses indicated that higher scores on the personality dimensions of anxiety sensitivity and impulsivity were found to be predictive of CB, with impulsivity being the strongest predictor. In the current study, higher anxiety sensitivity and impulsivity were

hypothesized to be associated with higher CB scores. It was also expected that higher hopelessness would be a predictor of CB, but it did not emerge as significant predictor. Previous research has determined a relationship between anxiety sensitivity and CB, and it has been reported that cognitive anxiety (i.e., mental worry), as opposed to somatic anxiety (i.e., physiological sensations) may be most related to CB (Davenport et al., 2011). Indeed, in their sample of 134 women, cognitive anxiety and impulsivity were both positively related to CB (Davenport et al., 2011). Although the SURPS does not separate anxiety sensitivity into the components of cognitive, social, and somatic worry, the current findings add to the existing literature on the relationship between anxiety sensitivity and CB. Previous research has established a relationship between depression and CB (Müller et al., 2019) and it is for this reason that hopelessness was hypothesized to contribute to CB. However, it has been suggested that anxiety sensitivity may be a precursor to CB, whereas depression may be associated with feelings of guilt after buying, thus making hopelessness more likely to emerge as a consequence of CB, rather than as a precursor. A longitudinal study examining personality and CB is needed to better establish the relationship between these two dimensions of negative affect and CB.

As previously mentioned, impulsivity was the strongest SURPS personality predictor of CB. Although not using the SURPS, the relationship between impulsivity and CB has been explored in several other studies and it has consistently emerged as a contributing factor to CB (e.g., Hague et al., 2016; Maraz et al., 2015; Richardson et al., 2019; Williams & Grisham, 2011). It is likely that impulsive individuals are more prone to certain behaviours, such as CB, due to their drive to seek immediate gratification from potential rewards (i.e., an online sale), despite the risk of negative long-term consequences (i.e., financial debt, Potenza & Taylor, 2009). Increased impulsiveness may also impact disinhibition, as impulsivity is thought to be a

facet of disinhibition (Duroy et al., 2018). Individuals high in impulsivity may be especially vulnerable to the online environment. Higher disinhibition was reported in pathological internet users (Niemz et al., 2005), which the authors posited could be explained by the “online disinhibition effect”, meaning that individuals may be more likely to engage in behaviours online that they would normally not do in-person because of the anonymity and invisibility associated with the internet (Suler, 2005). Thus, the online disinhibition effect may put online shoppers at even higher risk of CB than those who buy in stores.

No hypotheses were formulated with respect to the role of sensation seeking in CB given that the literature reports mixed findings. Williams and Grisham (2011) did not find an association between CB and sensation seeking, when it was measured as a facet of impulsivity; however, when sensation seeking was investigated as a separate construct from impulsivity, there were significant differences in sensation seeking scores found between compulsive buyers and non-compulsive buyers (Maraz et al., 2015). Although positive correlations between the impulsivity and sensation seeking subscales of the SURPS have been reported (Woicik et al., 2009), these two personality dimensions emerged as two separate factors in data reduction analyses and are measured as such on the SURPS. The results from the current study therefore suggest that CB may be driven more by impulsivity rather than the search for novel and exciting experiences (Woicik et al., 2009). Given the discrepant findings regarding the role of sensation seeking in CB, future studies should continue to examine the contribution of sensation seeking, using the SURPS, with respect to CB.

These results have important clinical implications as the personality model of the SURPS may be used to detect those at risk for CB, and further utilized for personality targeted interventions to treat CB. Previous studies have reported that the SURPS can be used to identify

individuals at risk of misusing substances (Krank et al., 2011) and interventions designed to target the specific personality traits of the SURPS have reported promising outcomes (Conrod et al., 2008; Conrod et al., 2010). In one of these studies, 368 adolescents with personality risk factors for substance misuse either received personality targeted interventions or no treatment (Conrod et al., 2008). After a 6 and 12-month follow-up, the control group showed increased alcohol consumption, whereas the treatment group reduced binge drinking (Conrod et al., 2008). In another study (Conrod et al., 2010), adolescents with elevated SURPS scores participated in a brief personality targeted and coping skills intervention and over a 2-year period, the intervention was found to prevent the onset of substance use and misuse. Therefore, if personality targeted interventions have proven successful in targeting substance misuse using the SURPS model, potential clinical applications with respect to CB may be worthy of study, especially for individuals with higher anxiety sensitivity and impulsive personalities, as these were found to be most associated with CB in the current study.

Nonreactivity is defined as avoiding impulsive reactions to inner experiences by not reacting to them (Baer et al., 2006), and this dimension of mindfulness was the only facet from the FFMQ to emerge as a predictor of CB. No specific hypotheses were formulated as to which dimensions of mindfulness may be most related to CB, but the emergence of nonreactivity as a facet of mindfulness to be inversely related to CB makes theoretical sense. Where impulsivity has been repeatedly linked with CB (e.g., Hague et al., 2016; Maraz et al., 2015; Richardson et al., 2019; Williams & Grisham, 2011), this dimension of personality has also been tied to nonreactivity (Gallo et al., 2020; Lattimore et al., 2011). In a study investigating alcohol use disorders, impulsivity was inversely related to nonreactivity and lower overall mindfulness was related to more impulsive traits (Gallo et al., 2020). This relationship was also seen in

compulsive eaters where nonreactivity was negatively associated with uncontrolled and emotional eating (Lattimore et al., 2011). Lacking the ability to be nonreactive may impact compulsive buyers by causing them to act on their negative thoughts, emotions, and bodily sensations without thinking of future consequences, thus enabling impulsive decisions, such as buying. These impulsive decisions may become more habitual over time, but it is believed that increasing mindfulness, specifically nonreactivity and acting with awareness, may be key components in the de-automatization of habitual responses (Levesque & Brown, 2007), such as those associated with CB.

The relationship between impulsivity and CB has been investigated extensively, however, this is the first time that facets of mindfulness, specifically nonreactivity, have been explored as potential variables that may account from this relationship. The findings of the current study indicate that impulsive individuals may be more likely to engage in compulsive shopping behaviours in part because of their tendency to react to their inner experiences. Given that nonreactivity was found to mediate the relationship between impulsivity and CB, future studies should explore if it could be targeted as a potential therapeutic treatment for CB. Previously, cognitive behavioural therapy (CBT) has been used specifically to increase nonreactivity in individuals with health anxiety, which resulted in positive outcomes (Hedman et al., 2017). In that specific study, it was found that CBT led to improvement in FFMQ nonreactivity scores, which allowed individuals to successfully expose themselves to cues that triggered participant's health anxiety and allowed them to prevent maladaptive responses to these anxiety provoking situations (Hedman et al., 2017). Hence, a strengthened ability to observe potentially distressing thoughts and emotions without reacting may allow impulsive individuals who engage in CB to prevent impulsive purchases. Several studies have found that mindfulness-based approaches

have been effective in treating both behavioural and substance-related addictions (Davis et al., 2018; Goldberg et al., 2018; Sancho et al., 2018), making it a worthwhile area to continue investigating and implementing into future CB studies.

Pathological gambling was recategorized from the “impulse-control disorders” chapter in the *Diagnostic and Statistical Manual of Mental Disorders fourth edition–Text Revision* (DSM-IV-TR; APA, 2000) to the “substance-related and addictive disorders” chapter in the DSM-5 (APA, 2013). This change was spurred by the similarities between substance use disorders and pathological gambling, which also resulted in pathological gambling being gradually viewed as a behavioural addiction, rather than an impulse-control disorder. Due to the relative lack of research on CB and controversy concerning the nature and classification of CB, it has yet to be recognized as a mental disorder (APA, 2013). The debate revolves around the classification of CB under the umbrella of obsessive-compulsive disorders (Ridgway et al., 2008), as an impulse-control disorder (Christenson et al., 1994) or as a behavioural addiction (Maraz et al., 2015). Obsessive-compulsive related disorders are often characterized by ego-dystonic (i.e., distressing and outside of the person’s control) and ritualized behaviours (Müller et al., 2015), a description that does not fit well with CB. Given that a key feature of CB is high impulsivity, it could make theoretical sense to categorize CB as an impulse-control disorder. However, because of the similarities between the symptoms of CB and substance use disorders, it is possible that CB may be better classified as a behavioural addiction with impulsive characteristics, similar to pathological gambling.

Behavioural addictions have many clinical similarities with their substance-related counterparts, including symptoms such as craving, tolerance, withdrawal and continued behaviour despite long-term consequences or wanting to stop, which have been reported in CB

(Piquet-Pessôa et al., 2014). Additionally, the current study examined the role of the SURPS, a personality model validated in substance users, and found that two of its dimensions, anxiety sensitivity and impulsivity, were predictive of CB. These findings lend support to the similarities between CB and substance disorders, which are consistent with the conceptualization of CB as a behavioural addiction. If replicated, the current findings will add to the evidence suggesting that CB is a behavioural form of addiction. If CB is classified as a behavioural addiction, it may be worth adopting a new term to minimize the possible confusion that comes with the word “compulsive” as part of the term CB. Maraz and colleagues (2015) suggested the use of the term “shopping disorder” or another label suggested by Müller et al. (2015) was “pathological buying”. In the literature, excessive shopping is referred to under many different names (e.g., CB, shopping addiction, pathological buying, etc.). Therefore, to benefit the future of research on this behaviour, as well as its consideration as a disorder in the DSM-5, it would be beneficial for researchers and clinicians to agree upon a universal term for CB.

The current study is not without its limitations. One of the limitations is that the sample was primarily female. Although there have been gender differences reported in CB, with females reporting greater CB than males (Maraz et al., 2016), CB is not gender specific and increased effort should be put into recruiting male participants in future studies. Having a more balanced sample will allow researchers to determine if both genders have similar or distinct risk factors for CB. The homogeneity of the sample is another limitation, as 87.6% of respondents identified as Caucasian. Minimal cultural and ethnic diversity in samples is a limitation of most studies on CB with a meta-analysis indicating that studies are typically conducted in developed countries (Maraz et al., 2016). Finally, the current study is limited by the use of a cross-sectional design. Thus, it is not possible to state that the personality, mindfulness, and internet use variables

examined in the study caused CB, but rather that relationships between these variables were found. Despite these limitations, this study was the first to employ the SURPS model to investigate CB, as well as to investigate the mediating role of mindfulness in the relationship between impulsivity and CB. Future studies should attempt to replicate these findings which support CB as a behavioural addiction, while also aiming to examine if there are therapeutic implications to the current findings.

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Table 1*Demographic Characteristics*

Characteristics	<i>M</i>	<i>SD</i>	Min	Max	%	N
Age (years)	27.14	12.04	18.00	76.00		534
Gender						
Female					84.1	449
Male					15.4	82
Other					0.6	3
Ethnicity						
White					87.6	468
Non-white					12.4	66
Population						
Student					71.2	380
Other					28.8	154
Geographic location						
Atlantic Canada					80.5	428
Rest of Canada					6.9	36
Other					12.8	68
Income						
Less than \$25,000					67.5	360
\$25,000–\$99,999					25.0	133
Greater than \$100,000					7.5	40
SURPS–H	13.73	3.80	7.00	28.00		
SURPS–AS	13.47	2.63	6.00	20.00		
SURPS–I	10.25	2.67	5.00	20.00		
SURPS–SS	14.66	3.65	6.00	24.00		
CIUS total	24.18	11.54	0.00	55.00		
FFMQ–O	27.39	5.51	8.00	40.00		
FFMQ–A	24.65	4.55	12.00	36.00		
FFMQ–NR	21.07	4.65	7.00	35.00		
FFMQ–NJ	23.11	6.72	8.00	40.00		
FFMQ total	120.87	12.85	71.00	156.00		
BSAS total	52.61	23.02	27.00	133.00		

Note. SURPS–H = Substance Use Risk Profile Scale–Hopelessness subscale; SURPS–AS = Substance Use Risk Profile Scale–Anxiety Sensitivity subscale; SURPS–I = Substance Use Risk Profile Scale–Impulsivity subscale; SURPS–SS = Substance Use Risk Profile Scale–Sensation Seeking subscale; CIUS = Compulsive Internet Use Scale; FFMQ–O = Five Facet Mindfulness Questionnaire–Observing subscale; FFMQ–A = Five Facet Mindfulness Questionnaire–

Awareness subscale; FFMQ–NR = Five Facet Mindfulness Questionnaire–Nonreactivity subscale; FFMQ–NJ = Five Facet Mindfulness Questionnaire–Nonjudging subscale; FFMQ = Five Facet Mindfulness Questionnaire Total; BSAS = Bergen Shopping Addiction Scale.

Table 2

Hierarchical Multiple Regression Analyses Predicting Compulsive Buying Score from Personality, Internet Use and Mindfulness Scores

Predictor	BSAS		95% CI	
	ΔR^2	β	LL	UL
Step 1	.039			
Gender		.174**	5.336	15.735
Occupation		.104*	0.948	9.648
Step 2	.297			
Gender		.090*	0.881	9.982
Occupation		.214**	6.920	14.831
SURPS–H		.050	-0.211	0.806
SURPS–AS		.109**	0.237	1.650
SURPS–I		.166**	0.669	2.132
SURPS–SS		.002	-0.500	0.525
CIUS total		.394**	0.599	0.948
FFMQ–O		.032	-0.200	0.464
FFMQ–A		-.029	-0.596	0.311
FFMQ–NR		-.086*	-0.857	0.004
FFMQ–NJ		-.041	-0.432	0.160
Total R^2	.336			

Note. SURPS–H = Substance Use Risk Profile Scale–Hopelessness subscale; SURPS–AS =

Substance Use Risk Profile Scale–Anxiety Sensitivity subscale; SURPS–I = Substance Use Risk

Profile Scale–Impulsivity subscale; SURPS–SS = Substance Use Risk Profile Scale–Sensation

Seeking subscale; CIUS = Compulsive Internet Use Scale; FFMQ–O = Five Facet Mindfulness

Questionnaire–Observing subscale; FFMQ–A = Five Facet Mindfulness Questionnaire–

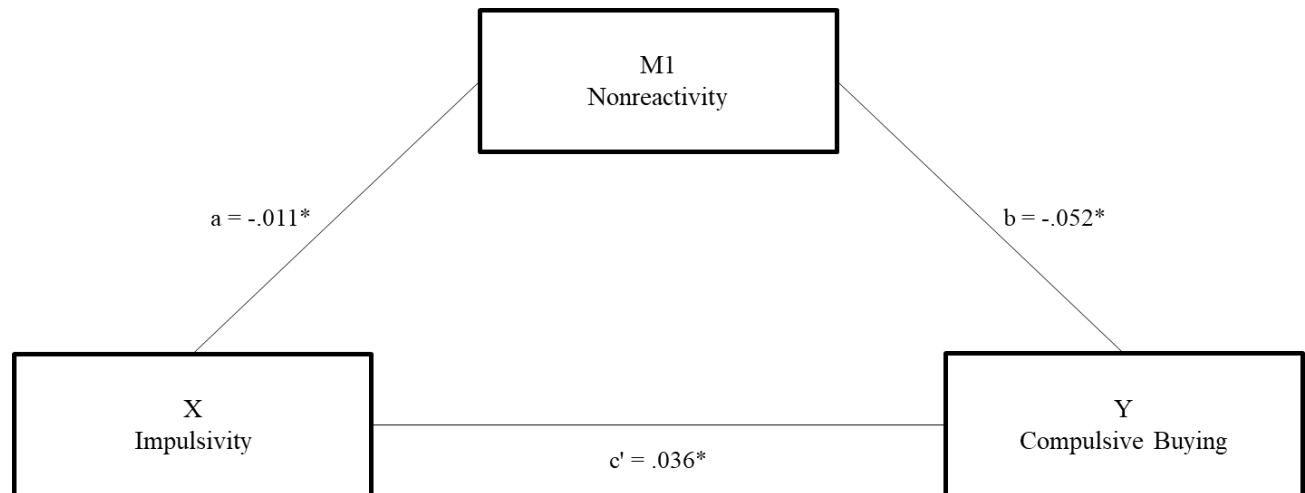
Awareness subscale; FFMQ–NR = Five Facet Mindfulness Questionnaire–Nonreactivity

subscale; FFMQ–NJ = Five Facet Mindfulness Questionnaire–Nonjudging subscale.

* $p < .05$. ** $p < .01$.

Figure 1

The Mediating Effect of the Five Facet Mindfulness Questionnaire-Nonreactivity Subscale on the Relationship Between Impulsivity and Compulsive Buying



* $p < .001$.

Appendix A**Demographic Questionnaire (Internally Generated)****Demographics**

The following questionnaire is used to collect demographic information.

What is your age (in years)?

What gender do you most closely identify with?

- Female
 Male
 Other / Prefer not to say

How would you describe your ethnicity? (Select all that apply)

- Black/ African Canadian (or American)
 East Asian/ Pacific Islander
 Hispanic/ Latinx
 Indigenous/ Native Canadian (or American) / Metis
 Middle Eastern / North African
 White/ Caucasian
 Other

What is your current primary occupation?

- Student
 Employed
 Unemployed
 Retired
 Other

What is the highest level of education that you have completed?

- Primary
- High School
- Some College
- Some University
- College
- Undergraduate University Degree
- Graduate University Degree

What area of Canada do you originate from?

- Atlantic Canada (New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador)
- Quebec
- Ontario
- Prairies (Manitoba, Saskatchewan, Alberta)
- British Columbia
- Territories (Nunavut, Northwest Territories, Yukon)
- Outside Canada

What is your best estimate of your total personal income, before taxes and deductions (gross income), from all sources during the last year?

- Less than \$24,999
- \$25,000-\$34,999
- \$35,000-\$49,999
- \$50,000-\$74,999
- \$75,000-\$99,999
- \$100,000-\$149,999
- Greater than \$150,000

Appendix B

Substance Use Risk Profile Scale (SURPS; Woicik et al., 2009)

Substance Use Risk Profile Scale

For each statement, please indicate how much you agree or disagree with the statement.

1= Strongly Disagree, 2= Disagree, 3= Agree, 4= Strongly Agree.

	1	2	3	4
1. I am content.				
2. I often don't think things through before I speak.				
3. I would like to skydive.				
4. I am happy.				
5. I often involve myself in situations that I later regret being involved in.				
6. I enjoy new and exciting experiences even if they are unconventional.				
7. I have faith that my future holds great promise.				
8. It's frightening to feel dizzy or faint.				
9. I like doing things that frighten me a little.				
10. It frightens me when I feel my heartbeat change.				
11. I usually act without stopping to think.				
12. I would like to learn how to drive a motorcycle.				
13. I feel proud of my accomplishments.				
14. I get scared when I'm too nervous.				
15. Generally, I am an impulsive person.				
16. I am interested in experience for its own sake even if it is illegal.				
17. I feel that I'm a failure.				
18. I get scared when I experience unusual body sensations.				
19. I would enjoy hiking long distances in wild and uninhabited territory.				
20. I feel pleasant.				
21. It scares me when I'm unable to focus on a task.				
22. I feel I have to be manipulative to get what I want.				
23. I am very enthusiastic about my future.				

Appendix C

Compulsive Internet Use Scale (CIUS; Meerkerk et al., 2009)

Compulsive Internet Use Scale

1= Never, 2= Seldom, 3= Sometimes, 4= Often, 5= Very Often

	1	2	3	4	5
1. How often do you find it difficult to stop using the internet when you are online?					
1. How often do you continue to use the internet despite your intention to stop?					
2. How often do others (e.g. partner, children, parents, friends) say you should use the internet less?					
3. How often do you prefer to use the internet instead of spending time with others (e.g. partner, children, parents, friends)?					
4. How often are you short of sleep because of the internet?					
5. How often do you think about the internet, even when not online?					
6. How often do you look forward to your next internet session?					
7. How often do you think you should use the internet less often?					
8. How often have you unsuccessfully tried to spend less time on the internet?					
9. How often do you rush through your (home) work in order to go on the internet?					
10. How often do you neglect your daily obligations (work, school or family life) because you prefer to go on the internet?					
11. How often do you go on the internet when you are feeling down?					
12. How often do you use the internet to escape from your sorrows or get relief from negative feelings?					
13. How often do you feel restless, frustrated, or irritated when you cannot use the internet?					

Appendix D

Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006)

Five Facet Mindfulness Questionnaire

1= Never or very rarely true, 2= Rarely true, 3= Sometimes true, 4= Often true, 5= Very often or always true

	1	2	3	4	5
1. When I'm walking, I deliberately notice the sensations of my body moving.					
2. I'm good at finding words to describe my feelings.					
3. I criticize myself for having irrational or inappropriate emotions.					
4. I perceive my feelings and emotions without having to react to them.					
5. When I do things, my mind wanders off and I'm easily distracted.					
6. When I take a shower or bath, I stay alert to the sensations of water on my body.					
7. I can easily put my beliefs, opinions, and expectations into words.					
8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.					
9. I watch my feelings without getting lost in them.					
10. I tell myself I shouldn't be feeling the way I'm feeling.					
11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.					
12. It's hard for me to find the words to describe what I'm thinking.					
13. I am easily distracted.					
14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way					
15. I pay attention to sensations, such as the wind in my hair or sun on my face.					
16. I have trouble thinking of the right words to express how I feel about things					
17. I make judgments about whether my thoughts are good or bad.					
18. I find it difficult to stay focused on what's happening in the present.					
19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.					

20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.					
21. In difficult situations, I can pause without immediately reacting					
22. When I have a sensation in my body, it’s difficult for me to describe it because I can’t find the right words.					
23. It seems I am “running on automatic” without much awareness of what I am doing.					
24. When I have distressing thoughts or images, I feel calm soon after.					
25. I tell myself that I should not be thinking the way I’m thinking.					
26. I notice the smells and aromas of things.					
27. Even when I am feeling terribly upset, I can find a way to put it into words.					
28. I rush through activities without being really attentive to them.					
29. When I have distressing thoughts or images, I am able just to notice them without reacting.					
30. I think some of my emotions are bad or inappropriate and I should not feel them.					
31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.					
32. My natural tendency is to put my experiences into words.					
33. When I have distressing thoughts or images, I just notice them and let them go.					
34. I do jobs or tasks automatically without being aware of what I’m doing.					
35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.					
36. I pay attention to how my emotions affect my thoughts and behavior.					
37. I can usually describe how I feel at the moment in considerable detail.					
38. I find myself doing things without paying attention.					
39. I disapprove of myself when I have irrational ideas					

Appendix E

Bergen Shopping Addiction Scale (Andreassen et al., 2015)

Bergen Shopping Addiction Scale (Modified for Online)

(1) Completely disagree, (2) Disagree, (3) Neither disagree or agree, (4) Agree, (5) Completely Agree

	1	2	3	4	5
1. Online shopping is the most important thing in my life					
2. I think about online shopping all the time.					
3. I spend a lot of time thinking of or planning online shopping.					
4. Thoughts about online shopping keep popping in my head.					
5. I shop online in order to feel better.					
6. I online shop in order to change my mood.					
7. I online shop in order to forget about personal problems.					
8. I online shop in order to reduce feelings of guilt, anxiety, helplessness, loneliness, and/or depression.					
9. I online shop so much that it negatively affects my daily obligations (e.g., school and work).					
10. I give less priority to hobbies, leisure activities, job/studies, or exercise because of online shopping.					
11. I have ignored love, partner, family, and friends because of online shopping.					
12. I often end up in arguments with other because of online shopping.					
13. I feel an increasing inclination to shop online.					
14. I online shop much more than I had intended/planned.					
15. I feel I have to shop online more and more to obtain the same satisfaction as before.					
16. I spend more and more time online shopping.					
17. I have tried to cut down on online shopping without success.					
18. I have been told by others to reduce online shopping without listening to them.					
19. I have decided to shop online less but have not been able to do so.					
20. I have managed to limit online shopping for periods, and the experienced relapse.					
21. I become stressed if obstructed from buying things online.					

22. I become sour and grumpy if I for some reasons cannot buy things online when I feel like it.					
23. I feel bad if I for some reason are prevented from online shopping.					
24. If it has been a while since I last shopped online, I feel a strong urge to buy things.					
25. I shop online so much that it has caused economic problems.					
26. I shop online so much that it has impaired my well-being.					
27. I have worried so much about my online shopping that it sometimes has made me sleepless.					

Appendix F**Informed Consent Form****INFORMED CONSENT**

Title of the study: Predictors of Online Shopping Addiction during the Covid-19 Pandemic

Investigators: Dr. Caroline Brunelle, cbrunell@unb.ca and Hanna Grossman (Honours Undergraduate Psychology Student), hgrossma@unb.ca

Please read the following information carefully before agreeing to participate in this research study.

This study is being conducted to examine the relationship between online shopping and various predictive factors that may contribute to this behaviour. Should you agree to participate in the study, you will be given five short questionnaires to complete, which will measure mindfulness, personality variables, various mental health symptoms, as well as online shopping and internet usage.

Your participation in this study is voluntary, and you may choose to withdraw or skip over questions at any point during the study without penalty. The study will take approximately 15 minutes to complete and any information provided throughout the study will be strictly confidential. To ensure confidentiality, names, and emails (given at the end of the study on a secure, separate website) will be entirely separate from the completed questionnaires. The information will be stored on an encrypted and password protected USB stick and locked in the primary researcher's office. Any information that you provide will only be used for the purpose of this study.

Psychology students at the University of New Brunswick will be awarded one half of a bonus point toward their final grade in a participating course. Other participants will be given the option to be entered in a draw for a \$25 Amazon gift card upon completion of the study.

This study is being conducted by Hanna Grossman (hgrossma@unb.ca) under the supervision of Dr. Caroline Brunelle (506-648-5797, cbrunell@unb.ca), in the Psychology Department at the University of New Brunswick, Saint John.

By clicking "Continue," I confirm that I have read the information on the INFORMED CONSENT FORM and volunteer to participate in this study. I am aware that all records are entirely confidential, and that I may discontinue my participation at any point in the study without loss of compensation.

Note: If you wish to be notified of the results when the study is completed, please email hgrossma@unb.ca.

Participants who wish to discuss this study with someone who is not directly involved in the research can contact the Research Ethics Chair, Dr. Beth Keyes, at (506) 648-5949, REB@unbsj.ca.

Appendix G

Research Ethics Board Approval

Dear Caroline,

As Chair of the Research Ethics Board at the University of New Brunswick (Saint John), I have reviewed your revised application for your proposed research titled “**Predictors of Online Shopping Addiction During the Covid-19 Pandemic**”- (REB File #023-2020) for its compliance with Tri-Council Policy (TCP) and with UNB Policy (UPRIH). On the basis of the review, I am pleased to inform you that this research appears to be in compliance with TCP and UPRIH. Accordingly, please consider this E-mail to represent official notification of REB approval of your project for a period of three years (August 24, 2020 – August 24, 2023). Thank you for accepting the recommended modifications to the application and consent form which were suggested. I have added these modified materials to your file.

If you require an official hard copy letter to satisfy a funding body, please inform our REB office (reb@unb.ca) as soon as possible. If the funds for this research project are held until REB approval, you will have to inform the Office of Research Services at UNB of this approval in order to release your funds.

Please note that, in the future, if you find that you must make any changes to your protocol, those changes must be considered and approved by the REB before they are implemented. To initiate changes, please submit the REB Case Modification Request form, available online through the Research Ethics page of the Office of the VP (Research).

Annual Reports for this project are due on the 15th of January each year, provided that this date is at least six months after the date of project approval. Final reports are due 90 days after project completion. Both of these reports can be found on our website at <http://www.unb.ca/research/ors/forms/index.php#ethics>.

If you have not already done so, please send an e-mail copy of your project summary (your answer to question # 1 of the ethics application form) to reb@unb.ca as soon as possible, including your REB File# in the subject line. Thank you for your co-operation in this matter.

Best wishes for the successful completion of your research project.

Dr. Beth Keyes, Chair
UNBSJ Research Ethics Board