Depressive symptoms and self-efficacy as mediators between life stress and compulsive buying: A cross-cultural comparison

YW Koh[1]; CSK Tang[2]; YQ Gan[3]; JY Kwon[4]

[1]The National University of Singapore, Centre for Family and Population Research, AS7, Shaw Foundation Building, 5 Arts Link Singapore 117570

[2]The National University of Singapore, Department of Psychology, Block AS4 #02-30, 9 Arts Link Singapore 117570

[3]Peking University, School of Psychological ad Cognitive Sciences, Beijing, 100871, China

[4]Korea University, Department of Psychology, Anam Campus 205C, Korea University, Anam-ro, Seongbuk-gu, Seoul, Republic of Korea

*Corresponding Author(s): Yvaine Yee Woen Koh

The National University of Singapore, Centre for Family and Population Research, AS7, Shaw Foundation Building, 5 Arts Link Singapore 117570

Email: FASKYW@nus.edu.sg

Abstract

Objective: The objective of the present study is to postulate a model in which the pathways of life stress-Compulsive Buying (CB) can be explored. The model subjected to empirical testing considered life stress as antecedent variables, self-efficacy and depressive symptoms as mediators of these effects on CB across United States (US), China and South Korea college student samples.

Methods: A total convenience sample of 3263 college students (aged 18-30) was recruited from US (N=1205), China (N=1090) and South Korea (N=968). Validated psychological instruments were used to measure compulsive buying, depressive symptoms, self-efficacy and life stress.

Results: According to the cut-off scores (<= -1.34) of Compulsive Buying Scale, 18.3% (N=522) was classified as compulsive buyers in the total sample. In the US sample, 21.3% (N=257) of the students were classified as compulsive buyers. 16.0% (N=142) and 16.1% (N=123) of students were identified as compulsive buyers in China and South Korea sample respectively. Multiple-mediation model suggested that self-efficacy and depressive symptoms partially mediated the relationship of life stress and compulsive buying. Life stress exerted both direct and indirect influences on compulsive buying. Further moderated mediation analysis found that the pathways of the model did not differ among the three listed countries.

Conclusion: The present study contributed to an improved understanding of the complexity of the underlying psychological mechanisms that are involved in compulsive buying. In particular, the confirmation that psychological dynamic for life stress-CB associations are invariant across different cultural contexts makes an important theoretical contribution. The results of the present study suggest that depressive symptoms should be closely monitored and tackled among the college students from different cultural settings in order to reduce CB. Assessment and teaching of enhancing self-efficacy should also be included in programs that target at preventing and treating CB.

Introduction

Compulsive Buying (CB) is defined by a preoccupation with buying and shopping, by frequent buying episodes, or overpowering urges to buy that are experienced as irresistible and senseless [1]. The shopping and buying episodes are accompanied by relief and pleasure, but followed by remorse and guilt due to the inappropriateness of the spending behavior and its negative consequences. The negative consequences had been examined by researchers, include financial problems, often significant indebtedness, and occasionally unlawful behavior [2]. Prevalence of CB had been examined in different populations and countries in recent years. A meta-analysis found that the prevalence of CB was 4.9% (3.4-6.9%, eight estimates, 10102 participants) among adult representative studies and 8.3% (5.9%-11.5%, 19 estimates, 14947 participants) among university students [3]. A United States (US) study on the female undergraduate students found 20% of compulsive buyers among the sample [4]. Another US study found 3.6% of college students met criteria for CB with significantly more women affect (4.4%) than men (2.5%) [5]. 7.4% of the Spanish university students reported of compulsive buying [6]. More studies had been done in China in recent years regarding CB, numerous popular press articles and websites have described this behavior and presented cases of CB [7]. A study that was done in China found the incidence of compulsive buying was 5.99% [8] among the college students. Another recent Chinese study found that 10.4% for the student sample and 29.1% for the general population sample were classified as compulsive buyers [9]. A South Korea study recruited a sample of individuals with frequent buying lapses found 57.8% prevalence of compulsive buying [10].

Life stress and compulsive buying

In psychology, stress is defined as a stimulus, a response, or a combination of both. The stimulus definition of stress is mainly concerned with external life events (such as accidents, loss of spouse, etc.), which are termed as stressors in that they create a change in human life (either positive or negative) that requires a readjustment [11]. Millennials (Ages 18-33) as a generational group enjoy extreme fun, yet they have the highest levels of stress of any other age group, with 39% reporting that their stress has increased compared to the previous year [12]. Life Stress, which affects the students, can be categorized as academic, financial, time or relationship-related, and self-imposed [13]. Sudden or long-term situations that people struggle to manage, such as disease, life, events, and imposed demands, can predispose an individual to psychological or physical risks [14]. Not only is life stress a known risk factor for substance dependence and addiction relapse [15], the youths were also found to develop addictions to cope with social stress [16]. Various studies from different countries had asserted the influence of life stress on CB. Eccles (2002) based her qualitative research on 46 female in the United Kingdom who identified themselves as addictive consumers and observed that CB is most often used as a coping mechanism for relieving stress present in an individual's life [17]. In Silbermann's et al. pilot study, 26 compulsive buyers recorded CB episodes during a two weeks assessment period. They reported a significantly higher number of daily stressful events on days when CB episodes occurred compared to days on which CB did not occur [18]. Family-related events were also found to correlate with CB among the youth. Divorce and parental and peer influence [19] and higher level of academic stress [20] were found to be correlated with higher level of CB among the US youths. In India, adolescents experiencing stress because of familial and non-familial factors show a higher tendency for CB behavior than those experiencing fewer such events [21].

Depressive symptoms, self-efficacy and compulsive buying

Within the diathesis-stress framework of mental disorder development, Davis proposed the cognitive-behavioral model of behavioral addiction and suggested that poor psychosocial health creates a predisposed vulnerability to behavioral addiction such as internet addiction and compulsive buying [22]. While CB was often explained by chronic and repetitive failures in self-regulation [23], different dispositional and maintaining factors may contribute to CB. Research has shown that several psychological factors such as anxiety and depression [24], impulsivity [25] could associate with CB. Over the last few decades, numerous studies have reported association between negative emotions and addictive buying [24]. Negative emotions have been considered as potential trigger of excessive buying episodes [26]. Dittmar et al. (2007) stated that compulsive buying is a means of managing individual mood state [27] and shopping might serve as a form of "self-medication" for negative emotions like depression. A study in the US confirmed, from the examination of the affective states in a group of compulsive buyers, the nervous and sad feelings increased before buying episodes and decreased immediately after the buying act [26]. Another study showed that depression was significantly different between three groups with low, moderate, and high compulsive buying propensity taken from a general population sample in Spain [28]. Evidence of the influence of negative affectivity on CB was also found among college students. A Spanish study on college students found that compulsive buyers obtained significantly higher scores in anxiety, depression, obsession-compulsion, hostility and somatization [6]. In the US, it was also found that compulsive buyers reported significantly greater depression among the college students [5].

According to social cognitive theory [29], people are less likely to engage in a behavior if they perceive themselves as being unable to perform it (i.e., low self-efficacy). Self-efficacy is the belief in one's ability to influence events that affect one's life and control over the way these events are experienced [30]. Previous studies had shown that self-efficacy plays an important role in youths' psychological health and significant correlation exists between high self-efficacy and increased psychological well-being [31]. People with high self-efficacy are capable of managing personal functions and are inclined to adopt positive problem-focused coping strategies. Therefore, they appear to be less affected by stressful events [32]. Although little research has focused on the association between self-efficacy and CB, previous study had demonstrated people who display CB symptoms were also identified as having low self-esteem, and CB may

act as a coping response to one's feelings of inadequacy [8]. In fact, a study found that the decreased of self-esteem and self-efficacy could significantly predict compulsive buying among the Chinese college students [8]. This indicates that self-efficacy might act as a critical protective factor for CB development and maintenance.

Proposed mediation model of life stress and compulsive buying

CB has attracted more and more attention in the past few years, it is a social as well as public health concern. It is associated with financial issue, mental health and social outcomes that impact on individual, their families and larger community [2]. There is a paucity of research on specifically how life stress influences on compulsive buying. Relatively less research has examined psychological mechanisms underlying the relationship between life stress and CB. Furthermore, there might also be individuals who experienced life stress who do not develop CB behavior. Hence, it is important to identify psychological factors that may affect the life stress-compulsive buying associations.

In reviewing the literature, a few studies had attempted to examine the mediating effect of emotional distress on materialism and CB [33] but there is not much research regarding the interrelationships between life stress, self-efficacy, depressive symptoms and CB. The objective of the present study is to postulate a model in which the pathways of life stress-CB can be explored. Using both Davis' cognitive behavioral model [22] of behavioral addiction and Bandura's [29] social cognitive theory as the guiding theories, the following model was proposed (Figure 1). The model subjected to empirical testing considered life stress as antecedent variables, self-efficacy and depressive symptoms as mediators of these effects on CB across United States (US), China and South Korea college student samples (as of Figure 1). A contribution of the present paper lies in cross-national comparison of the CB phenomenon and to clarify whether depressive symptoms and self-efficacy mediated the influence of life stress on CB among college students in different countries. Specific hypotheses of this study included:

(i)   Life stress, self-efficacy, depressive symptoms and CB would correlate with each other.

(ii)   Depressive symptoms and self-efficacy would mediate the relationship between life stress and CB controlling for age and gender.

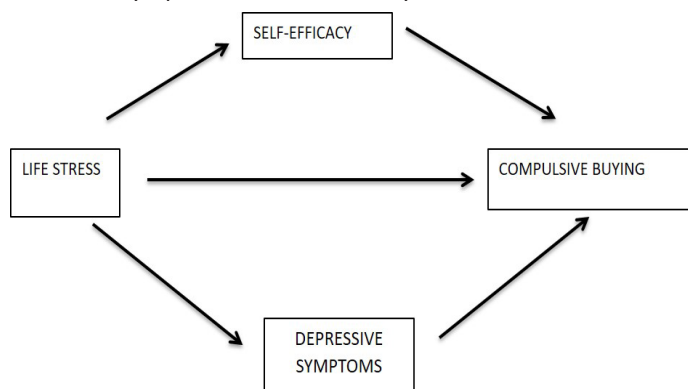(iii)   Country would moderate the mediation effects of depressive symptoms and self-efficacy.

Figure 1: Proposed Multiple Mediation Model

Methodology

Procedure

Inclusion criteria of this study were full-time college students aged 18-30 years old. A total convenience sample of 3263 college students was recruited from the US (N=1205), China (N=1090) and South Korea (N=968). The US students were recruited national-wide via an online platform to complete online questionnaires. The students in Asian countries were recruited via advertisement in university websites, student activity centers, and dormitories. These students were asked to complete paper-and-pencil questionnaires. English questionnaires were used for the US students. The English questionnaire was translated to Chinese by one expert in the field who are proficient in both English and Chinese. The Chinese version was then back-translated to English by another Chinese-English bilingual expert. Modifications were then made to the Chinese translation to ensure translation equivalence. The final Chinese questionnaires were administered to participants in China. The same translation procedures were done to Korean questionnaires. Informed consents were sought from all students before the start of the study. The questionnaires took about 20 minutes to complete, and no personal identifiable data was collected. The study was approved by the respective Institutional Ethics Review Boards.

Sample

College students from these countries were chosen as the samples in this study for several reasons. College students have general purchase knowledge and shopping experience and sometimes engage in excessive shopping behaviors (e.g., in terms of credit card use). Second, Many studies had utilized student samples in investigating CB behavior, which provided an ideal literature base for comparison and reference [4,8]. US, China and South Korea were countries with comparable economic status, the consumer buying patterns should reflect similarity. However, US, China and South Korea also reflected very differently in terms of traditional eastern and western cultural values. In contrast to previous research, which draws on homogenous populations, the use of cross-cultural sample reinforces the impact of the results since it tests robustness in similar economic but different cultural settings. It allows the researchers to examine the possible cultural dissimilarities of the consuming behavior through the proposed models. The participants' characteristics were summarized in Table 1.

Instruments

Compulsive buying

Compulsive Buying Scale [34] was used to measure shopping addiction. It is a well-validated 7-item screening instrument for compulsive buying behavior. The items explored specific behaviors, motivations, feelings and financial aspects associated with buying. Lower scores indicated a higher level of compulsive buying. Reliability and validity of the scale was tested to be 0.95 [35]. Participants that scored <= -1.34 was categorized as "compulsive buyer" [34].The Cronbach's alpha is 0.79 in this study.

Depressive symptoms

The 9-item Depression Scale was adopted from the diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [36]. Sample items are "depressed mood", "marked diminished interest of pleasure" during the past 2-week. Possible responses are never (0), sometimes (1), most

of the day (2) and nearly every day (3). The Cronbach's alpha is 0.88 in this study.

Life stress

Participants' lifetime experience of stressful events was assessed by a 9-item checklist [37]. This checklist was based on common stressful life events such as stress in relation to work, ill health, family or interpersonal conflict, financial difficult, legal problem, alcohol/drug use, psychiatric/emotional concern, sleep/eating disturbance etc. The internal consistency of items was 0.74 [37]. Participants were asked to indicate with "yes" or "no" to each item on the checklist. Affirmative responses were summed to form a total score. The Cronbach's alpha is 0.66 in this study.

Self-efficacy

Self-efficacy was measured by general perceived self-efficacy scale [38]. It is a 10-item scale that measure general self-efficacy. A typical item is "Thanks to my resourcefulness, I can handle unforeseen situations". Possible responses are not at all true(1), hardly true(2), moderately true(3), and exactly true(4), yielding a total score between 10 and 40. The internal consistency coefficient was 0.86 [39]. The Cronbach's alpha is 0.89 in this study.

Statistical analyses

The IBM SPSS 25.0 computer software was used for statistical analyses. Descriptive analyses of sample characteristics and major variables were conducted. Bivariate correlations were computed to examine associations between all major variables.

The SPSS PROCESS macros version 3 was used for bootstrapping analyses to determine the significance of mediators. The indirect, direct, and total effects of life stress on CB via the two mediators were determined. An effect was considered as significant if its 95% bootstrap confidence interval from 10,000 bootstrap samples does not include zero. The proposed multiple mediation model that specified life stress ➔ self-efficacy and depressive symptoms ➔ compulsive buying (Model 4 from PROCESS macros) was tested on overall sample. Then the moderated mediation (Model 59 from PROCESS macros) was tested to determine country differences.

Results

Preliminary analyses

One way ANOVA showed that there were significant country differences on demographic and psychological variables. Chinese sample was significantly younger (China = 19.79, South Korean = 21.65, US = 21.71, F= 383.79, p=.000) and scored higher in the depression scale than the Korean and US samples (China= 5.06, South Korea= 4.91, US= 4.50, F= 13.88, p=.000). US sample reported higher life stress score (China=1.65, South Korea= 1.55, US=1.98, F= 19.64, p=.000) and self-efficacy score (China= 28.18, South Korea=27.46, US=31.06, F= 197.53, p=.000) than the other two country samples. In terms of CB, US sample reported higher tendency of CB than the Asian counterparts (China= 0.62, South Korea= 0.36, US= 0.32, F= 6.81, p=.000). In the total sample, bivariate correlations showed that CB was related to life stress (r= -.34,p <.000), self-efficacy(r= .20,p<.000) and depressive symptoms (r=-.35,p<.000) (Table 2).

Table 1: Summary of Demographic and Descriptive Statistics

	All	China	South Korea	United States
Participants *N (%)*	3263 (100%)	1090 (33.4%)	968 (29.7%)	1205 (36.9%)
GENDER				
Male	1517 (46.5%)	477 (43.8%)	444 (45.9%)	596 (49.5%)
Female	1745 (53.5%)	612 (56.2%)	524 (54.1%)	609 (50.5%)
EDUCATION LEVEL				
Undergrad Year 1	640 (19.6%)	275 (25.2%)	187 (19.3%)	178 (14.8%)
Undergrad Year 2	980 (30%)	463 (42.5%)	248 (25.6%)	269 (22.3%)
Undergrad Year 3	749 (23%)	246 (22.6%)	229 (23.7%)	274 (22.7%)
Undergrad Year 4	690 (21.1%)	51 (4.7%)	268 (27.7%)	371 (30.8%)
Graduate school	180 (5.5%)	55 (5.1%)	36 (3.7%)	113 (9.4%)
Mean(SD)				
AGE	21.05 (2.05)	19.79 (1.49)	21.65 (1.94)	21.71 (2.04)
Life Stress	1.74 (1.72)	1.65 (1.68)	1.55 (1.61)	1.98 (1.81)
Self-Efficacy	29.05 (4.79)	28.18 (4.59)	27.46 (4.63)	31.06 (4.37)
Depressive symptoms	4.81 (2.61)	5.06 (2.49)	4.91 (2.63)	4.50 (2.68)
Compulsive Buying	0.42 (1.95)	0.62 (1.80)	0.36 (1.78)	0.21 (2.15)

Table 2: Bivariate Correlations of Major Variables (N=3263)

	1	2	3	4	5
1.Age	1				
2.Compulsive Buying	-.054*	1			
3.Life Stress	.027	-.34*	1		
4.Self-efficacy	.081*	.20*	-.12*	1	
5.Depressive symptoms	-.026	-.35*	.42*	-.31*	1

Note: *p<.01

Prevalence of compulsive buying

According to the cut-off scores (<= -1.34) of Compulsive Buying Scale [34], 18.3% (N=522) of the participants was classified as compulsive buyers in the total sample. In the US sample, 21.3% (N=257) of the students were classified as compulsive buyers. 16.0% (N=142) and 16.1% (N=123) of students were identified as compulsive buyers in China and South Korea sample respectively (Figure 2). Independent sample t-tests were conducted on major variables to detect group differences (compulsive buyers VS non-compulsive buyers) in the total sample. Significant group differences were found for self-efficacy (t=6.08,p <.000), life stress(t= -15.31,p <.000) and depressive symptoms(t= -12.39,p <.000). Compulsive buyers scored lower in self-efficacy and higher in life stress and depressive symptoms. There was no age difference among compulsive buyers and non-compulsive buyers (p>.05).

Testing single mediation models

Single mediation analyses were performed to examine how various psychological variables would influence the severity of CB (Model 4 of the SPSS PROCESS procedure).

For the whole sample (N=3263), two simple mediation analyses were performed to examine self-efficacy and depressive symptoms as the mediators in the relationship between life stress and CB respectively controlling for age and gender (Figure 3). The total non-mediated effect of life stress on CB was significant (β = -.35, t = -17.96, p = .000, with a 95% CI of -.32 to -.18). The direct effect of life stress on CB become lesser at β = -.34, t = -17.20, p< .000, with a 95% CI of -.30 to -.17 after controlling for self-efficacy. The indirect effect of life stress on CB through self-efficacy was significant and estimated to be -.02 with a 95% CI of -.03 to -.01. On the other hand, the direct effect of life stress on CB becomes lesser at β = -.24, t = -11.71, p = .000, with a 95% CI of -.29 to -.20 after controlling for depressive symptoms. The indirect effect of life stress on CB through depressive symptoms was significant and estimated to be -.11 with a 95% CI of -.13 to -.10.

Testing multiple mediation models

A multiple mediation analysis was performed to examine how various psychological variables would influence the severity of CB (Model 4 of the SPSS PROCESS procedure). In the whole sample (N=3263), the total non-mediated effect of life stress on CB was significant (β = -36, t = -17.98, p= .000, with a 95% CI of -.32 to -.18) after controlling for age and gender. The direct effect of life stress on CB becomes lesser at β = -24, t = -11.57, p= .000, with a 95% CI of -.20 to -.12 after controlling for self-efficacy and depressive symptoms. The indirect effect of life stress on CB through self-efficacy was significant and estimated

to be -.01 with a 95% CI of -.02 to -.006. The indirect effect of life stress on CB through depressive symptoms was also significant and estimated to be -.10 with a 95% CI of -.12 to -.08. Thus, this suggested that self-efficacy and depressive symptoms partially mediated the relationship of life stress and CB. Life stress exerted both direct and indirect influences on CB (Figure 4).
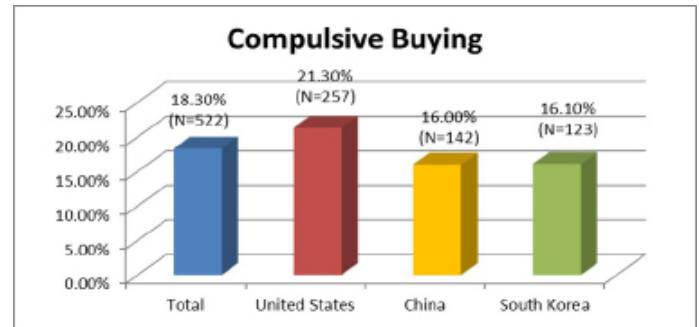

Figure 2: Country-specific Prevalence of Compulsive Buying
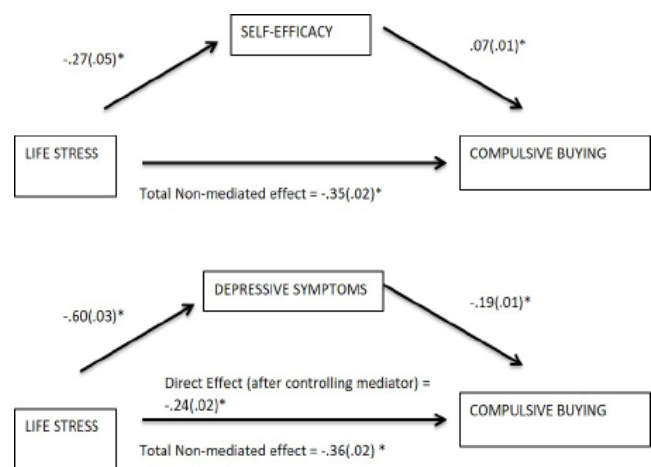

Figure 3: Simple Mediation Model on Variables (N=3263)
Note: 1. The indirect effect of life stress on compulsive buying through self-efficacy was significant and estimated to be -.02 with a 95% CI of -.03 to -.01 for the total sample (N=3263).
2. The indirect effect of life stress on compulsive buying through depressive symptoms was significant and estimated to be -.11 with a 95% CI of -.01 to -.13 and -.10 for the total sample (N=3263).
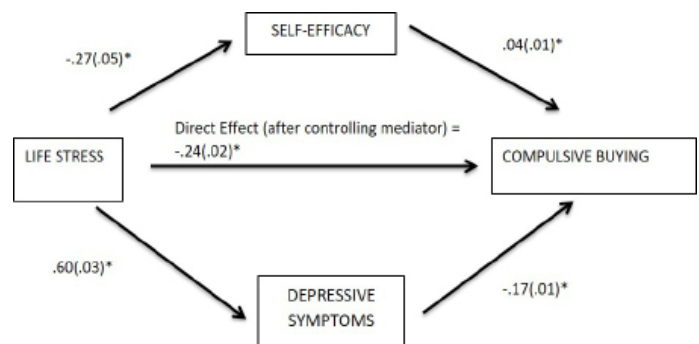3. Values presented in the figures are coefficients and standard errors *p<.01

Figure 4: Multiple Mediation Model on Variables (N=3263)
Note: 1. The indirect effect of life stress on compulsive buying through self-efficacy and depressive symptoms was significant and estimated to be -.01 with a 95% CI of -.02 to -.006 and -.10 with a 95% CI of -.12 to -.08 respectively for the total sample (N=3263).
2. Values presented in the figures are coefficients and standard errors *p<.01

Country as a moderator

The moderated mediation analysis procedures were also conducted to test whether country difference was a significant moderator of the two mediators (Model 59 of the SPSS PROCESS procedure). Results were not significant for depressive symptoms X countries (b= -.05, SE= .03, t=-1.37, p=.17 for US vs Korea; b=-.02, SE= .04, t= -.53, p=.60 for US vs China) and self-efficacy X countries (b= -.02, SE= .018, t=-1.17, p=.24 for US vs Korea; b=.003, SE= .02, t= .17, p=.87 for US vs China). In other words, the pathways of the model did not differ among the three countries. The finding indicated that the model was robust across the three listed countries. Table 3 presents the moderated mediation effect.

Table 3: Conditional Indirect Effect of Country on Compulsive Buying

	Conditional Indirect Effect		
	Compulsive Buying (CB)		
	Coefficient	SE	95% CI
Self-efficacy			
US	-.03	.008	-.05 to -.012
South Korea	-.01	.006	-.02 to -.001
China	-.02	.009	-.04 to -.008
Depressive symptoms			
US	-.10	.019	-.14 to -.07
South Korea	-.13	.018	-.16 to -.09
China	-.09	.017	-.13 to -.06

Discussions

The previous literature reported inconsistent findings regarding prevalence of CB among college students in different countries [4,5,8]. The present study showed that about 18% of the surveyed college students reported CB behavior. Further analysis found that US college students reported higher prevalence of CB than the Asian counterparts (US: 21.3%; China: 16%; South Korea: 16.1%). The difference in prevalence of CB among US and Asian students could be due to the country differences in shopping experience as well as attitude towards spending and credit card use. A study comparing US and Chinese students showed that even though youths from both countries have perceived mobile marketing to be useful and innovative, risk avoidance serves as a major barrier to youth consumers' acceptance of mobile marketing in China [40]. Another study examined attitudes towards credit cards and money among US and Chinese students found that Chinese students reported far fewer credit cards and much less debt than American students [41]. The Chinese students were also less self-confident in their ability to handle money and reported lower perceived financial wellbeing than American students [41]. These factors could explain the lower risk of CB among Asian students in the present study. Regardless, the current literature and present study have shown that a significant percentages of college students exhibit CB behavior [3]. Without early detection and intervention, these college students may be at risk to further deteriorate and develop more severe pathological CB behaviors, which have serious negative social, financial, mental health and health outcomes. Therefore, it is important to identify the underlying psychological factors that may influence the development and maintenance of CB among the college students.

The major contribution of the present study was the identification of the underlying psychological factors that were related to CB. In line with the existing literature, the present study found that among college students, CB was significantly related to life stress [17,18,19,20,21], depressive symptoms [26,28,5] and self-efficacy [8]. Furthermore, results supported the proposed multiple-mediation model and indicated that life stress was related to CB mainly through the influences of depressive symptoms and self-efficacy among the college students. In particular, depressive symptoms were found to be the most prominent psychological factor that linked life stress to CB. These findings also supported major explanatory models of behavioral addictions [22] and the social cognitive theory [29]. According to these models, poor psychosocial health and low self-efficacy creates a predisposed vulnerability to behavioral addiction like CB. As Dittmar et al. (2007) stated that shopping might serve as a form of self-medication" for negative emotions like depressive symptoms, it can provide mood modification, pleasure, excitement, and sense of control [27]. Depressed students with low self-efficacy who had difficulty handling academic, social or other life stress may turn to CB as a way of escaping and coping. As these individuals become increasingly depend on CB to cope with stress events in life, their ability to function and cope may be further deteriorated, leading to CB.

Until now, there is very little cross-cultural study regarding CB behavior among college students. A recent study attempted to test cross-cultural invariance in young British, Chinese, Czech and Spanish consumers in CB behaviors found that there was no significant difference in CB dimensions among the different cultural groups [42]. The study further asserted that the core antecedents of the CB phenomenon remain rooted in the psychological dynamics of compulsive buyers, regardless of their specific cultural context. In line with previous research, the theoretical model of the present study also proved to be robust across different culture groups namely US, China and South Korea. In other words, there is no indication that the psychological factors underlying CB are different among these listed countries. Kacen and Lee(2002) presumed that collectivism, such as that which characterizes Chinese and South Korean society, would function as a deterrent to CB as collectivistic culture advocates the importance of saving for the future and long term planning [43]. However, the results of present study indicated that the underlying psychological mechanism of CB might not be influenced by cultural orientation towards individualism or collectivism. Instead, psychological factor such as depressive symptoms and self-efficacy had exerted more influence on shopping behavior across different cultures. Perhaps, the mechanism of CB development and maintenance lies in the universality of the inner human psyche and external influences have only a superficial impact on the disorder [42].

Limitations

Major limitations of behavioral addiction research are the lack of representative samples and the reliance on self-report data. The present study also shared these limitations. Self-report data might result in the overestimation of the disorders and oversight of the cultural biases on self-reporting attitudes among the college students from different countries/regions. Different recruitment procedures for respective countries' participants (i.e. US students completed online questionnaires) could also lead to potential bias. The US sample might thus be

over-represented by relatively low-stress students, as those who experienced severe life stress might not be interested to participate in the present study. It should also be noted that the present study did not specify offline and online shopping for the CB measurement. Caution should be exercised when generalizing and interpreting the findings. Finally, results of the hypothesized multiple-mediation model were based on analyses of cross-sectional data at a single time point. This rendered it difficult to establish directionality and causality.

Conclusions

Despite the above limitations, this study provided important empirical evidence on the effect of life stress on CB among college students in different countries. It contributes to an improved understanding of the complexity of the underlying psychological mechanisms that are involved in CB. In particular, the confirmation that psychological dynamic for life stress-CB associations are invariant across different cultural contexts makes an important theoretical contribution. The results have important implications for early detection, prevention, and treatment of the issue of CB for college individuals. The present results converged to indicate that depressive symptoms are a salient psychological factor that influences CB as well as being closely associated with life stress and CB. Depressive symptoms should be closely monitored and tackled among the college students from different cultural settings in order to reduce CB. Individuals with low self-efficacy are inclined to apply negative coping strategies and therefore tend to be more affected by stressful events [32]. Hence, assessment and teaching of enhancing self-efficacy should also be included in programs that target at preventing and treating CB.

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