

Adult Attachment Moderates Dispositional Mindfulness and Hoarding in College Students

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Abstract: Online shopping has become a commonly used option for contemporary college students. The promotion of e-commerce shopping festivals has also increasingly inspired young people to buy and hoard goods in large quantities. However, few studies have focused on the hidden mechanism behind hoarding behavior in the consumer field. The aim of this study is to discuss the psychological factors related to hoarding behaviors and investigate the relationship among dispositional mindfulness, adult attachment, and hoarding. Data were collected through an online questionnaire from 206 Chinese college students using the Five Facet Mindfulness Questionnaire (FFMQ), Relationship Scales Questionnaire (RSQ), and Saving Inventory Revised (SI-R). Regression analyses supported the negative relationship between dispositional mindfulness and hoarding. Mediation analyses by bootstrap revealed the mediating role of the adult attachment self-model between dispositional mindfulness and hoarding. These findings confirm that dispositional mindfulness level and adult attachment self-model influence customers' hoarding behaviors..

1. Introduction

With fierce competition in the e-commerce market, shopping festivals such as “Double 11” have been created to promote sales. This has caused the hoarding behavior of the older generation to appear in young people gradually. Relevant literature studies have found that compared with the traditional form of planned and quantitative shopping, during the shopping festival, consumers will indulge in buying non-essential goods in large numbers all at once, or other behaviors different from usual (Oh and Kwon, 2009). In this context, most of the existing research focuses on the characteristics of online shopping festivals and impulsive consumption on the part of consumers, ignoring the significant impact of adult attachment on hoarding. The aim of this study is to help consumers and e-commerce enterprises fully understand hoarding behavior.

2. Literature Review and Hypotheses

In the field of consumer research, the Stimulus Organization Response (SOR) framework is widely used in researching consumer behavior processes (Jacoby, 2002). The theory holds that perceived stimuli trigger consumers' psychological evaluation, which causes consumers to have positive or negative behavioral reactions. Kim and Shim also pointed out that in online shopping, consumers can not only collect information and purchase products, but also meet their own experiential and emotional needs (Liu et al., 2013). As a key factor for explaining hoarding behavior, the relationship between attachment to objects and hoarding has been discussed in many studies. Haws et al. (2012) stated that attachment to objects could compensate for the absence of secure relationships with people. Acquisition of and attachment to objects offer comfort and security, and some hoarders even tend to anthropomorphize their possessions as extensions of themselves or their loved ones (Burgess et al., 2018; Mathes et al., 2019). In addition, hoarding

behavior can be predicted by feelings of uncertainty toward oneself and others, as well as self-ambivalence (questioning one's self-worth) (Frost et al., 2007). These notions are close to the concept of attachment theory, which implies that adult attachment may be an important factor in predicting hoarding behavior (Danet and Secouet, 2018).

On the other hand, psychological factors related to hoarding have been previously focused on, in order to understand hoarding behavior (Frost and Hartl, 1996; Frost et al., 2015): dispositional mindfulness and adult attachment are among these factors. A construct proposed by Bishop et al. (2004) defining dispositional mindfulness as comprising of two components. The first component emphasizes the self-regulation of attention, such as non-elaborative awareness of sensations, thoughts, and feelings, and sustained attention. The second component focuses on the ability to approach experiences with acceptance (Stevenson et al., 2019). Thus, mindfulness may strengthen the awareness of potential cognitive-behavioral processes underlying consumption, allowing consumers to make more deliberate buying choices instead of impulsive decisions. Mindfulness allows individuals to perceive thoughts, emotions, and experiences without judging, comparing, or ruminating on them and being aware of the present moment instead of avoiding it (Brown et al., 2007). Furthermore, several studies have shown that low levels of attachment anxiety and attachment avoidance (positive adult attachment model) are associated with higher levels of mindfulness (Stevenson et al., 2017; Goodall et al., 2012).

Above all, previous studies have made valuable contributions to mindfulness, adult attachment, and hoarding; however, the mediating effects of adult attachment on the relationship between dispositional mindfulness and hoarding has not been discussed. Based on the above discussion, this study proposes three hypotheses:

H1: Mindfulness is negatively related to hoarding.

H2: Adult attachment self-model mediates the relationship of mindfulness and hoarding. H3: Adult attachment other model mediates the relationship of mindfulness and hoarding.

3. Method

3.1 Participants and Procedure

A total of 206 Chinese college students participated in this survey by filling out the online questionnaires, including three measures of dispositional mindfulness, adult attachment, and hoarding tendency over the span of a week. The samples consisted of 108 males and 98 females, ranging from 18 to 25 years old (mean = 20.66, SD=1.65), from different provinces of China.

3.2 Measures

3.2.1 Hoarding

Saving Inventory Revised (SI-R) is to test the hoarding tendency with 2 items reverse-scored and a 23 item, 5-point Likert-type (from 0 = "none" to 4 = "almost all/complete") self-report (Frost et al., 2004). It consists of three subscales representing different performances of hoarding: clutter subscale (9 items), difficulty discarding/saving subscale (7 items), and excessive acquisition subscale (7 items). Previous research has reported on the high internal consistency and good reliability of this measure (Neave et al., 2016).

3.2.2 Mindfulness

The Five Facet Mindfulness Questionnaire (FFMQ) is a 39-item self-report questionnaire that evaluates levels of dispositional mindfulness with 19 items reverse-coded and has been shown to have good internal consistency and validity. Participants were asked to rate statements on a 5-point Likert scale from 1 = "never or very rarely true" to 5 = "very often or always true" (Baer et al., 2006).

3.2.3 Adult Attachment

The Relationship Scales Questionnaire (RSQ) was chosen to measure adult attachment, as its statements focus on individuals and their current partners, including parents, friends, or lovers, which is suitable for this study. The RSQ was applied to assess the adult attachment self-model and the adult attachment other model in this study. The original version is a 30 item self-report questionnaire, which is designed as a dimensional measure of four adult attachment styles: secure adult attachment, anxious adult attachment, avoidant adult attachment, and fearful adult attachment (Griffin and Bartholomew, 1994b). Thirteen items were removed because their descriptions of a romantic relationship were not suitable for this research. The original RSQ was adjusted into two dimensions: the adult attachment self-model and the other model with 12 items reverse-coded. After factor analyses, 11 items were left with 7 items reverse-coded.

4. Results

4.1 Factor Analysis and Reliability Analysis

As shown in Table 2, the Saving Inventory Revised with 23 items was examined as three factors are dealt with varimax rotation, two items were removed, and 21 items were left. The SI-R with 21 items demonstrated a total score of $\alpha = .885$, demonstrating adequate internal consistency. Factor analysis was conducted with five factors using the Chinese version of the Five Facet Mindfulness Questionnaire, and four were removed, leaving 34 items. The FFMQ displayed adequate to good internal consistency ($\alpha = .775$). The Relationship Scales Questionnaire with 17 items was used to conduct factor analysis with four factors, and five items were removed, leaving 12 items (Table 2). The RSQ with 12 items demonstrated sufficient convergent validity and internal consistency (total: $\alpha = .613$, adult attachment self-model: $\alpha = .713$, adult attachment other: $\alpha = .731$).

Table 1 : Factors Emerging from the Efa of Si-r

Item	1	2	3
C-3.	0.75		
C-5.	0.697		
C-22.	0.652		
C-15.	0.637	0.313	
C-12.	0.607	0.326	
C- 8.	0.584	0.38	
C-20.	0.577		
C-1.	0.558		
C-10.	0.531		
D-6.		0.779	
D-7.		0.762	
D-23.		0.728	
D-19.	0.315	0.588	
D-17.		0.556	
EA-18.			0.631
EA-14.			0.618
EA-21.		0.306	0.591
EA-9.			0.555
EA-2.			0.539
EA-16.	0.357		0.539
EA-11.			0.529

Note: Factor loadings < 0.3 were suppressed. Factor 1: Clutter Subscale; Factor 2: Difficulty Discarding/ Saving Subscale; Factor 3: Excessive Acquisition Subscale.

Table 2 : Factors Emerging from the Final-Step-Efa of Rsq

Item	1	2
22.	0.642	
10.	0.637	
1.	0.635	
24.	0.626	

15.	0.572	
26.	0.538	-0.31
8.	0.521	
3.	0.512	
28.		0.824
16.		0.788
9.		0.721

Note: Factor loadings < 0.3 were suppressed. Factor 1: Adult attachment other model; Factor 2: Adult attachment self-model.

4.2 Descriptive Statistics and Correlation Analyses

Demographic information can be seen in Table 3. The majority of participants were undergraduates, accounting for 85.4%, and 75.2% of the participants were single. The mean value, standard deviation, and Pearson correlation matrix for the zero-order key variables and demographic variables are presented in Table 4. Regarding the correlations, there were some basic findings: (1) Dispositional mindfulness was negatively correlated with hoarding ($r=-.194$, $p<0.01$), while it was positively correlated with the adult attachment self-model ($r=.378$, $p<0.01$) and adult attachment other model ($r=.145$, $p<0.01$). (2) There was a negative correlation between adult attachment self-model and hoarding ($r=-.344$, $p<0.01$), while the correlation between the adult attachment other model and hoarding was small and non-significant. Significant correlations were found between age and dispositional mindfulness, as well as between gender and hoarding. Educational level and relationship status were also significantly correlated with key variables (adult attachment and hoarding).

Table 3 : Descriptive Statistics of Demographic Variables

Min		Max	Mean
Age 18 years		25 years	20.66 years
	Category	Number	Percentage (%)
Gender	Male	108	52.4
	Female	98	47.6
Education Level	College	25	12.1
	Undergraduate	176	85.4
	Postgraduate	5	2.4
Relationship Status	Single	155	75.2
	Having a partner	51	24.8

Table 4 : Means, Standard Deviations and Zero-Order Correlations Matrix

	Mean	Std	1	2	3	4	5	6	7	8	9
Dispositional Mindfulness	3.00	0.38	1								
Adult Attachment Self-Model	2.57	1.04	.378**	1							
Adult Attachment Other Model	3.22	0.72	.145*	N.A.	1						
Hoarding	1.59	0.56	-.194**	-.344**	0.019	1					
Age	20.66	1.65	.162*	0.064	0.07	-0.111	1				
Gender	N.A.	N.A.	0.055	-0.051	0.083	.282**	N.A.	1			
Educational level	N.A.	N.A.	0.102	0.099	.224**	-.173*	N.A.	N.A.	1		
Relationship status	N.A.	N.A.	0.11	-0.089	.149*	0.057	N.A.	N.A.	N.A.	1	
Income/Monthly cost of living	N.A.	N.A.	0.096	0.07	-0.004	-0.027	N.A.	N.A.	N.A.	N.A.	1

Note: N=206 *
P<0.05, **
P<0.01

Gender and Relationship status are dummy variables; Gender: Male=0, Female=1; Relationship status: Single=0, Have a partner=1.

Table 5 : Regression Analyses of Dispositional Mindfulness, Hoarding and Adult Attachment Self-Model

	Hoarding	Adult Attachment Self-Model	Hoarding
Dispositional Mindfulness	197**(.067)	39**(.066)	-.087 (.070)
Adult Attachment Self-Model			-.283**(.069)
R ²	0.144	0.167	0.210
F	6.707	8.007	8.833

Note: * p<0.05, ** p<0.01; Standard deviations are in parentheses.

Table 6 : Regression Analyses of Dispositional Mindfulness, Hoarding and Adult Attachment Other Model

	Regression 1	Regression 2	Regression 3
	Hoarding	Adult Attachment Other Model	Hoarding
Dispositional Mindfulness	-.197**(.067)	.140*(.068)	-.196**(.068)
Adult Attachment Other Model			-.010 (.069)
R ²	.144	.105	.144
F	6.707	4.703	5.565

Note: * p<0.05, ** p<0.01; Standard deviations are in parentheses.

4.3 Regression Analyses

To clarify the relationship between dispositional mindfulness and hoarding, dispositional mindfulness as independent variables and age, gender, educational level, and relationship status as covariates were entered into the model for predicting hoarding, $F(5, 200) = 6.707$, $R^2 = .144$. In this model, dispositional mindfulness was negatively related to hoarding at the 95% significance level ($\beta = -.197$, $SE = .067$, $t(200) = -2.948$, $p = .004$). It was shown that dispositional mindfulness had an impact on hoarding behaviors. Individuals with a low level of dispositional mindfulness had a higher possibility of hoarding possessions.

The analyses of the adult attachment self-model are shown in Table 5. The results illustrated that dispositional mindfulness significantly affected the adult attachment self-model with the coefficient $\beta = .039$ ($SE = 0.066$, $t(200) = 5.900$, $p < 0.001$), when age, gender, educational level, and relationship status were treated as covariates ($F(5, 200) = 8.007$, $R^2 = .167$). When the adult attachment self-model was controlled ($\beta = -.283^{**}$, $SE = .069$, $t(199) = -4.100$, $p < 0.001$), the effect of dispositional mindfulness on hoarding became insignificant ($\beta = -.087$, $SE = .070$, $t(199) = -1.247$, $p = .214$). Thus, adult attachment played a complete mediating role between dispositional mindfulness and hoarding. Similarly, the analyses of adult attachment in other models are shown in Table 6. Thus, the third condition to test the mediation effect was not fulfilled. As a result, adult attachment did not play a mediating role between dispositional mindfulness and hoarding.

4.4 Mediation Analyses

The results of the mediation analysis indicated that the adult attachment self-model fully mediated the relationship between dispositional mindfulness and hoarding (Figure 1). The total effect was statistically significant ($\beta = -.197$, $SE = .067$, $t = -2.948$, $p = 0.004$).

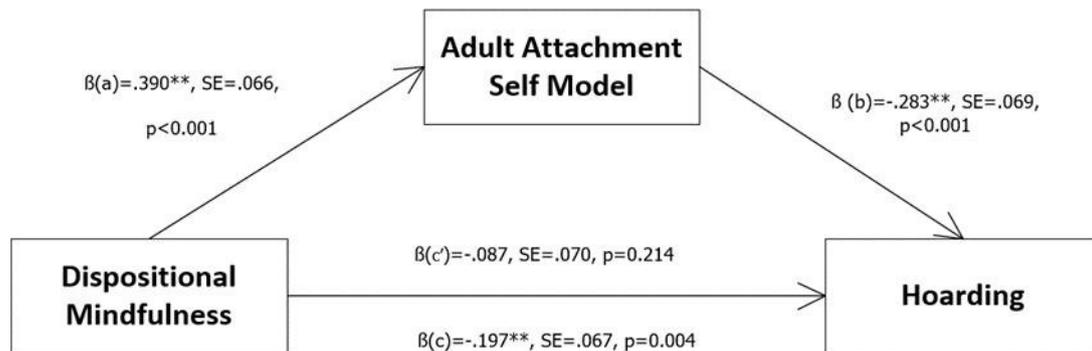


Fig.1 : Estimates of Effects in the Simple Mediation Model.

Note: * $p < 0.05$, ** $p < 0.01$; The direct effect of mindfulness on hoarding is presented above the horizontal line and the total effect is presented below. (a)=coefficient of dispositional mindfulness on adult attachment self-model regression model; (b)=coefficient adult attachment self-model on hoarding regression model; (c')= coefficient of dispositional mindfulness on hoarding when considering the adult attachment self-model as a mediator (the direct effect); (c)=coefficient of dispositional mindfulness on hoarding regression (the total effect).

5. Discussion

The action of overaccumulation becomes risky and leads to poor results. For consumers, a high level of hoarding tendency may bring considerable distress and impairment or even make them fall into financial difficulties and chaos (Cross et al., 2018). Hoarding behaviors can also pose challenges to companies. Hoarders are likely to postpone the decision to replace a product if they do not know what to do with the old one. This may impede businesses from selling new products (Guillard and Pinson, 2012). At the societal level, hoarding behavior leads to a waste of resources, since goods hoarded by people may not be used immediately, and this action deprives others of their use. Finally, these goods may become a societal burden on the community. Considering these negative impacts and consequences, it is necessary to explore the underlying factors that contribute to hoarding.

The aim of this study was to examine the relationship between dispositional mindfulness, adult attachment, and hoarding. As expected, dispositional mindfulness was negatively related to hoarding tendencies. In addition, the adult attachment self-model fully mediated the relationship between dispositional mindfulness and hoarding. However, the adult attachment other model did not play a mediating role in the relationship between dispositional mindfulness and hoarding. This result may be caused by the inconsistent relationship between the adult attachment self-model and hoarding. In the correlation analyses of this study, the adult attachment other model showed an insignificant association with hoarding. The underlying information related to this result requires further discussion. Some previous studies also show that the relationship between the adult attachment other model and hoarding is not constant. For instance, Neave et al. (2016) used the Revised Adult Attachment Scale (RAAS) and Experiences of Close Relationships-Relationship Structures (ECR-RS) to measure adult attachment and the Saving Inventory Revised (SI-R) to measure hoarding. In this study, the association between adult attachment avoidance (other model) and hoarding is inconsistent. RAAS-avoidance and ECR-RS maternal avoidance were significantly linked with hoarding behavior, while ECR-RS paternal anxiety is not. These contradictory results may reflect the weakness of the relationship between the adult attachment other model and hoarding. According to attachment theory, it is possible that the self-reliance characteristic of the adult attachment other model influences the way people treat objects (Danet and Secouet, 2018).

From the perspectives of consumers, clarifying the psychological factors contributing to hoarding may help them reduce irrational hoarding behaviors, such as excessively acquiring goods that they do not need, storing useless goods, and forming a healthy consumption concept. According to the finding on the relationship between mindfulness and hoarding, mindfulness

training can be utilized to increase consumers' awareness of their actions and reduce unnecessary waste. From a business perspective, this study can help college students better understanding and face the challenge of hoarding. For instance, consumers' hoarding tendencies may impede a business from selling new products. Moreover, hoarders find it difficult to discard items and choose to keep them instead of selling or giving them away; this may hinder the development of the second-hand market as well. From a social perspective, the issues of environmental protection and sustainable consumption are being paid increasing attention. Reducing hoarding behavior can contribute to reducing the wastage of scarce resources, thereby increasing social well-being.

6. Limitations and Further Directions

This study has several limitations as well as directions for further research. Due to the COVID-19 effect, research has only been conducted online. If future conditions permit, research can increase the accuracy of the data collected by adding scenario-based experiments, in-depth interviews, and other methods. Furthermore, future research can replicate these findings while using different measures (Hoarding: SI-R, SCI; Adult attachment: ECR, RQ), or go further to discuss the subscales of mindfulness, hoarding, and different attachment dimensions.

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