



Full length article

# The influence of media multitasking on the impulse to buy: A moderated mediation model



Yuhmiin Chang

Department of Advertising, National Chengchi University, 64, Sec. 2, Zhinan Rd., Taipei, 11605, Taiwan, Republic of China

## ARTICLE INFO

## Article history:

Received 1 August 2016

Received in revised form

26 December 2016

Accepted 28 December 2016

Available online 29 December 2016

## Keywords:

Impulse-buying tendency (IBT)

Media multitasking

Perceived information utility

Perceived social presence

Stimulus-organism-response (S-O-R)

framework

The impulse to buy

## ABSTRACT

This study explores whether and why media multitasking is related to the impulse to buy among young people. The results of an online survey of 993 college students supported the proposed moderated mediation model. For individuals with a higher impulse-buying tendency, media multitasking enhanced the buying impulse through the mediation of high perceived information utility. For individuals with a lower or moderate impulse-buying tendency, media multitasking enhanced the buying impulse through the mediation of high perceived information utility and social presence. The moderated mediation model extended the stimulus-organism-response (S-O-R) framework and demonstrated the moderating influence of an impulse-buying tendency.

© 2016 Elsevier Ltd. All rights reserved.

## 1. Introduction

Previous studies have consistently found that young people are often engaged in media multitasking, particularly the combined use of television and the Internet. Chang (2015) found that 57.1% of members of the Web Generation use mobile Internet devices while watching television. Kononova, Zazorina, Diveeva, Kokoeva, and Chelokyan (2014) found that 77.6% of college students in Kuwait, Russia, and the USA sometimes or frequently use television and the Internet concurrently.

Young people also tend to shop impulsively. Researchers at Yahoo found that 43.5% of people under age 20 use mobile Internet for shopping and that 33.4% of mobile shoppers are likely to shop impulsively (Yahoo, 2013). Chase Bank also found that 83% of US millennials have made impulse online purchases and are significantly more likely to do so than their older peers (eMarketer, 2015). Is it possible that as young people engage in media multitasking more frequently, their impulse to buy things becomes stronger? This study aims to answer this question and to identify the psychological mechanisms underlying this phenomenon.

Lewis and Reiley (2013) found that television advertisements

during the Super Bowl tend to immediately trigger online searches for the brands advertised. Liaukonyte, Teixeira, and Wilbur (2015) found that television advertising has an immediate impact on online buying behavior. Liu, Li, and Hu (2013) suggested that the Internet facilitates impulsive buying. Therefore, it is likely that television-Internet multitasking will lead to a stronger impulse to buy among young people. Impulse-buying behavior is unplanned purchase behavior without conducting prior research, evaluating alternatives, or considering consequences (Jeffrey & Hodge, 2007). The impulse to buy is the desire to make a purchase upon encountering an object in one's environment (Beatty & Ferrell, 1998). Impulse-buying behavior has attracted considerable research attention because it can significantly contribute to overall product sales (Jeffrey & Hodge, 2007; Madhavaram & Laverie, 2004).

Several studies have applied the stimulus-organism-response (S-O-R) framework to online impulse buying among members of the younger generation (Liao, To, Wong, Palvia, & Kakhki, 2016; Liu et al., 2013). However, not one of the studies has considered media multitasking as a situational cue. This study extends the S-O-R framework by considering media multitasking as the situational cue (S), perceived information utility and social presence as the internal reactions (O), and the impulse to buy as the behavioral response (R). Additionally, this study postulates that impulse-

E-mail address: [changy@nccu.edu.tw](mailto:changy@nccu.edu.tw).

buying tendency (IBT) moderates the mediation effect. Individuals with different IBT levels are expected to have different mediation patterns.

The theoretical value of this study is as follows: (1) it demonstrates the applicability of the S-O-R framework to media multitasking situation; (2) it elucidates the S-O-R framework by incorporating source magnification theory and social impact theory; (3) it identifies perceived information utility and social presence as the two psychological mechanisms linking media multitasking and the impulse to buy; and (4) it validates the moderating role of IBT for the mediation model, which is considered to have a positive and direct effect on the impulse to buy (Flight, Rountree, & Beatty, 2012; Liu et al., 2013). The S-O-R framework and the influences of the two mediators and the moderator will be discussed in the following section, from which the moderated mediation model will be established.

## 2. Theoretical background

### 2.1. The S-O-R framework and the impulse to buy

Introduced by Woodworth (1929), the S-O-R framework is an improvement on the classical stimulus-response (S-R) theory in behaviorism. Classical S-R theory considers human behavior to be a learned response to stimuli. The S-O-R framework extends the classical S-R theory by integrating an organism to account for individuals' internal reactions in response to situational stimuli. The framework posits that situational cues (S) trigger an individual's internal reactions (O), which subsequently affect his or her behavior (R). This framework has recently been introduced to online buying research on, for example, online purchase intention (Jiang, Chan, Tan, & Chua, 2010) and online repurchase intention (Hsu & Tsou, 2011).

Several studies have applied the S-O-R framework to online impulse buying among young people (see Table 1). Parboteeah, Valacich, and Wells (2009) surveyed a convenience sample of 264 undergraduate students in the United States. The results of their study supported the S-O-R framework, and they found that task-relevant and mood-relevant situational cues (S) significantly influenced perceived usefulness and enjoyment (O) and subsequently influenced the urge to buy impulsively online (R).

Ning Shen and Khalifa (2012) combined the S-O-R framework and the Mehrabian-Russell (M-R) model to examine the mediated relationship. The M-R model considers three basic emotional states that mediate responses to stimuli in a retailing environment. These authors examined the mediation effects through a laboratory experiment with 151 undergraduate students in Dubai. Their findings supported a serial mediation relationship in which interactivity and vividness influenced social presence and telepresence

(S), which in turn influenced pleasure and arousal (O) and buying impulse (R).

Liu et al. (2013) aimed to identify the relationships among website cues, personality traits, and the urge to impulse purchase online on the basis of the S-O-R framework. These authors surveyed a convenience sample of 318 college students in China. They found that the visual appeal of a website (S) significantly triggered three personality traits: impulsiveness, normative evaluation, and instant gratification (O). The three traits, in turn, significantly influenced the urge to buy impulsively online (R).

Finally, Liao et al. (2016) conducted a lab experiment with 120 undergraduate students in Taiwan. Their data showed that online product presentation, product type, and the interaction of the two (S) significantly influenced an individual's pleasure or arousal (O), which subsequently influenced the urge to buy impulsively.

Overall, previous studies relating to the impulse to buy among young people have examined different situational stimuli and internal reactions. No study has considered media multitasking as a situational cue. The following sections will elaborate on why media multitasking leads to a stronger impulse to buy through the mediation of perceived information utility and social presence.

### 2.2. Perceived information utility as the mediator

Previous studies have suggested two reasons why engaging in media multitasking more frequently can result in higher perceived information utility. First, habitual media multitaskers have an information-process bias in favor of attending and processing greater amounts of information, even information that is not directly relevant (Lin, 2009; Ophir, Nass, & Wagner, 2009). Duff, Yoon, Wang, and Anghelcev (2014) revealed a positive relationship between media multitasking and advertising utility. They found that high media multitaskers are more likely to perceive advertising information as having utility because they have broader attentional filters and a reduced ability to filter out irrelevant information. In the same vein, young people who often engage in media multitasking should have the cognitive propensity to attend and process greater amounts of information from multiple media, which results in higher perceived information utility.

Second, source magnification theory holds that an individual will perceive high information utility when two consecutive sources are independent (Harkins & Petty, 1981a, 1981b, 1987; Moore & Reardon, 1987; Moore, Reardon, & Mowen, 1989). In media multitasking, individuals oscillate from television to the Internet to obtain product information (Brasel & Gips, 2011). Because these sources are mostly independent of one another, individuals are more likely to consider overall information utility to be high.

Source magnification theory also suggests that higher perceived information utility will result in higher motivation to process

**Table 1**  
The S-O-R framework and the impulse to buy among college students.

Source	Stimulus (S)	Organism (O)	Response (R)
Parboteeah et al. (2009)	Task-relevant cues Mood-relevant cues	Perceived usefulness Perceived enjoyment	Urge to buy impulsively
Ning Shen and Khalifa (2012)	Interactivity Vividness Social Presence Telepresence	Pleasure Arousal	Buying Impulse
Liu et al. (2013)	Product availability Visual appeal Website ease of use	Impulsiveness Normative evaluation Instant gratification	Urge to buy impulsively
Liao et al. (2016)	Product presentation Product type Product presentation × Product type	Pleasure Arousal	Urge to buy impulsively

subsequent messages. Individuals tend to seek product information to satisfy their recreational or hedonic needs (Bloch, Sherrell, & Ridgway, 1986) and attend to and process information consistent with their beliefs (Festinger, 1957; Ward & Morganosky, 2000). In other words, individuals are more likely to seek information regarding their favored products and process messages that advocate the products through other media. Positive brand information enhances the urge to purchase a product (Beneke, Flynn, Greig, & Mukaiwa, 2013; Zeithaml, 1988). Therefore, hypothesis one is proposed as follows:

**H1.** Media multitasking has a positive effect on the impulse to buy through the mediation of perceived information utility.

### 2.3. Perceived social presence as the mediator

Perceived social presence is a subjective feeling of being together with virtual people in a communication-mediated world (Biocca, Harms, & Burgoon, 2003; Fulk, Steinfield, Schmitz, & Power, 1987; Gunawardena, 1995). Previous studies have suggested three reasons why engaging in media multitasking more frequently can result in higher perceived social presence. First, individuals tend to treat television, computer, and new media as real people (Reeves & Nass, 1996). As the amount of media to which an individual is simultaneously exposed increases, so does the number of virtual people they perceive. Second, technological developments such as larger screens and improved image quality have made interacting with media content such as talk show hosts a more immersive and engaging experience, thus further increasing the sense of social presence (Bracken & Botta, 2010). Third, habitual media multitaskers prefer to spread their attention broadly and have difficulties shifting their attention among different types of media. In other words, when habitual media multitaskers shift their attention back to one medium, they may continue to think about the previous medium rather than disengage from it (Jeong & Fishbein, 2007; Oviedo, Tornquist, Cameron, & Chiappe, 2015). Due to their information-process biases, habitual media multitaskers perceive more virtual people while media multitasking.

Social impact theory suggests that perceived social presence has a positive effect on the impulse to buy. As developed by Latané (1981), social impact theory suggests that real and virtual social sources can influence an individual. Social impact is a multiplicative function of the strength, number, and immediacy of social sources. Strength describes the salience of a given social source to an individual. Number refers to the number of social sources. Immediacy describes the closeness in space or time between a social source and an individual. According to the theory, increasing the strength and number of social sources while reducing their distance to an individual will increase the impact of those social sources.

In a media multitasking situation, an individual experiences a high subjective feeling of being together with virtual social sources in a communication-mediated world. Those virtual social sources are strong because of improved media technology, are greater in number because of the many media and virtual people to which the individual is exposed, and are close in space and time. In line with social impact theory, these virtual social sources are highly likely to influence the individual. One such influence is the impulse to buy. Gefen and Straub (2004) found a mediating effect of perceived social presence on purchase intention. Luo (2005) also found that the presence of others is likely to influence the urge to buy impulsively. Therefore, this study will test the following hypothesis.

**H2.** Media multitasking has a positive effect on the impulse to buy through the mediation of perceived social presence.

### 2.4. Impulse-buying tendency (IBT) as the moderator

IBT is a personality trait that refers to the degree to which an individual is likely to make unintended and immediate purchases with little conscious deliberation or evaluation of consequences (Flight et al., 2012; Liu et al., 2013). Previous studies have consistently found a positive and direct effect of IBT on the impulse to buy. Flight et al. (2012) found that IBT significantly and positively influenced the impulse to buy in an online survey of 621 American college students on the basis of trait activation theory (TAT). TAT explains the interaction between situation and personality in the prediction of behavioral outcomes. This theory suggests that arousal from situational cues evokes trait-relevant behavioral responses. Liu et al. (2013) surveyed a convenience sample of 318 college students in China and found that impulsiveness significantly and positively predicted the urge to buy impulsively. In contrast to previous studies, this study argues that IBT moderates the mediation effect between media multitasking and the impulse to buy. Specifically, this study posits that the effect of media multitasking on the impulse to buy is mediated by the interaction of perceived social presence and IBT, but not by the interaction of perceived information utility and IBT.

Earlier studies have suggested that higher-IBT individuals are irrational and lack cognitive control (Flight et al., 2012; Liu et al., 2013; Youn & Faber, 2000). Recent studies have rejected this view by showing that higher- and lower-IBT individuals are not significantly different in terms of their need for cognition, which is the tendency to engage in and enjoy effortful cognitive activity (Cacioppo & Petty, 1982; Lins et al., 2015). Habitual media multitaskers tend to perceive product information from multiple media as high in utility. Higher- and lower-IBT individuals, who enjoy thinking, will experience low uncertainty and have a stronger urge to buy impulsively because of higher perceived product utility (Cacioppo & Petty, 1982; Chen, Su, & Widjaja, 2016). In other words, the IBT level does not moderate the mediation effect of perceived information utility between media multitasking and the impulse to buy.

However, the IBT level does moderate the mediation effect of perceived social presence between media multitasking and the impulse to buy. Higher-IBT individuals are more likely to be individualism, whereas lower-IBT individuals are more likely to be collectivism (Kacen & Lee, 2002). Because higher-IBT individuals have an independent self-concept, they are less likely to have the impulse to buy when another person is present, in contrast to lower-IBT individuals, who have a more interdependent self-concept (Sharma, Sivakumaran, & Marshall, 2014). Similarly, IBT is positively correlated with narcissism. Narcissists consider themselves to be superior to others and engage in impulsive buying to enhance their self-image. Therefore, perceived social presence does not impact the urge to buy for individuals with higher IBT (Cai, Shi, Fang, & Luo, 2015; Lucas & Koff, 2014). Finally, higher-IBT individuals are concerned only with the quality of external cues such as marketing stimuli, whereas lower-IBT individuals are also concerned with “smart buying” and obtaining a good deal (Youn & Faber, 2000). Luo (2005) and Lim & Rashad Yazdanifard, 2015 suggested that the presence of others releases an individual's impulse-buying inhibitions and enhances his or her feeling of smart buying. Overall, previous studies have suggested that while habitual media multitaskers tend to perceive high social presence in the context of media multitasking, higher-IBT individuals do not rely on others when making impulse-buying decisions, whereas lower-IBT individuals do (see Fig. 1). Therefore, the following hypothesis will be tested.

**H3.** IBT moderates the mediation effect of perceived social presence between media multitasking and the impulse to buy.

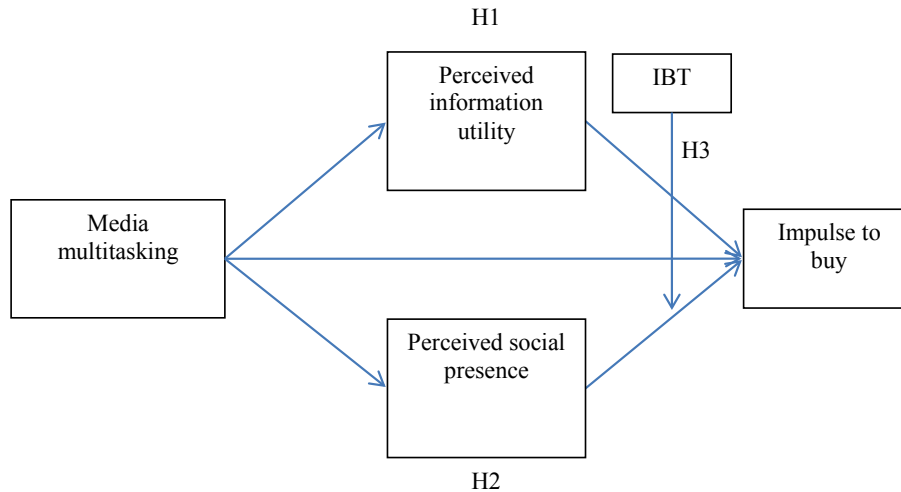


Fig. 1. The moderated mediation model of media multitasking on the impulse to buy.

### 3. Method

#### 3.1. Procedure and participants

An online survey was administered to undergraduate and graduate students from three universities located in northern, central and southern Taiwan from December 2014 to January 2015. Respondents were recruited through campus e-mail, posters, BBS, and Facebook fan pages. All promotional materials included a URL linked to the online survey on SurveyMonkey. Reminder e-mails were sent periodically to encourage participation. A raffle with prizes such as movie tickets was used to encourage participation.

Four steps were taken to ensure data quality. First, only complete questionnaires were included in the final analysis. Second, only questionnaires completed by students with valid e-mail addresses or student IDs from the target universities were included. Third, in the case of multiple submissions from a single individual, only the first submitted questionnaire was included. Replication was detected on the basis of students' e-mail address and student ID. Fourth, the answers to each question item were checked to control for respondents who may have provided the same answer for all of the question items in the survey. No such case was found.

A total of 1298 students took part in the survey, and 993 complete and valid responses were obtained. The survey respondents were mainly female ( $n = 607$ , 61.1%) undergraduate students ( $n = 752$ , 75.7%) with an average age of 23.2 years ( $SD = 3.15$ ). Almost all respondents owned a personal computer ( $n = 972$ , 97.9%). Multiple response analysis showed that most respondents accessed the Internet through laptop computers ( $n = 885$ , 42.1%), followed by mobile phones ( $n = 702$ , 33.4%), desktop computers ( $n = 282$ , 13.4%), and tablet computers ( $n = 154$ , 7.3%).

#### 3.2. Measurement

Previous studies have consistently found that young people tend to combine television and Internet uses (Chang, 2015; Kononova et al., 2014). This study thus conducted an in-depth interview before launching the survey to determine the most common TV-Internet media multitasking situations for product information. *Media multitasking* measures involved four items: I tend to watch [television news/dramas/talk shows/commercials] and search for related product information online simultaneously (Cronbach's alpha = 0.88).

*Perceived information utility* measures were adapted from

Schierhorn, Wearden, Schierhorn, Tabar, and Andrews (1999), C. Lin (2000), and Huh, DeLorme, and Reid (2004). Five items were included: "[Television combined with Internet gives me enough product information to feel informed/Product information on both television and the Internet are what I expect them to be about/Television combined with Internet is useful to keep me informed about product information/Product information on both television and the Internet is helpful/Product information on both television and the Internet influences me to make purchasing decisions] when I watch television and search online simultaneously" (Cronbach's alpha = 0.88).

The measures of *perceived social presence* were adapted from Kushniryk and Levine (2012). Participants were asked three questions: "I tend to get a sense of [human contact/sociability/human warmth] when I watch television and search online simultaneously" (Cronbach's alpha = 0.94).

The *impulse to buy* measures used in Luo (2005) were applied. Three question items were asked: "[I have the urge to purchase items other than or in addition to my specific shopping goal/I feel a sudden urge to buy/I have strong urges to make impulse purchases] when I watch television and search online simultaneously" (Cronbach's alpha = 0.93).

This study used the *IBT* measures developed by Flight et al. (2012). The question items included "It is fun to buy spontaneously," "I often buy things without thinking," "Sometimes I feel like buying things on the spur of the moment," and "Buy now, think about it later describes me" (Cronbach's alpha = 0.80).

The abovementioned measures were assessed on a seven-point Likert scale that ranged from 1 ("strongly disagree") to 7 ("strongly agree"). Perceived information utility, perceived social presence, the impulse to buy, and IBT were averaged for subsequent analyses.

### 4. Results

#### 4.1. Testing mediation effects: H1 and H2

Hypotheses one and two propose that media multitasking has a positive effect on the impulse to buy through the mediation of perceived information utility (H1) and perceived social presence (H2). The bootstrapping method of 5000 resamples using Hayes's (2013) the PROCESS macro for SPSS with Model 4 was employed to investigate the mediation effects. The results showed that media multitasking significantly and positively influenced perceived information utility,  $t = 8.01$ ,  $p < 0.001$  (Table 2 Model A), and



perceived social presence,  $t = 22.41$ ,  $p < 0.001$  (Table 2 Model B). The results also showed that media multitasking,  $t = 11.45$ ,  $p < 0.001$ , perceived information utility,  $t = 6.77$ ,  $p < 0.001$ , and perceived social presence,  $t = 3.62$ ,  $p < 0.001$ , significantly and positively influenced the impulse to buy (Table 2 Model C). The indirect effect test further showed that media multitasking had a significantly positive effect on the impulse to buy through the mediation of perceived information utility, 95% CI [0.03, 0.07], and social presence, 95% CI [0.03, 0.12], as zero was not included in the confidence intervals (Table 3). Therefore, hypotheses one and two were supported.

#### 4.2. Testing moderated mediation effects: H3

Hypothesis three suggests that IBT moderates the mediation effect of perceived social presence between media multitasking and the impulse to buy. The bootstrapping method of 5000 resamples using Hayes's (2013) the PROCESS macro for SPSS with Model 14 was employed to investigate the moderated mediation effect. The results showed that media multitasking was a significant predictor of perceived information utility,  $t = 8.01$ ,  $p < 0.001$  (Table 4 Model A), and perceived social presence,  $t = 22.41$ ,  $p < 0.001$  (Table 4 Model B). The results also showed that media multitasking, perceived information utility, perceived social presence, IBT, and the interaction of perceived social presence and IBT were significant predictors of the impulse to buy ( $p < 0.05$ ), whereas the interaction of perceived information utility and IBT was not,  $t = 0.49$ ,  $p = 0.63$  (Table 4 Model C).

The conditional indirect effect test showed that information utility was a significant mediator between media multitasking and the impulse to buy regardless of the level of IBT, as zero was not included in the confidence intervals (Table 5). Nonetheless, perceived social presence was a significant mediator between media multitasking and the impulse to buy only when the IBT level was one standard deviation less than mean, 95% CI [0.03, 0.15] or equal to the mean, 95% CI [0.01, 0.10]. When the IBT level was one standard deviation above the mean, perceived social presence did not significantly mediate the effect between media multitasking and the impulse to buy, 95% CI [−0.03, 0.06]. Therefore, hypothesis three was supported.

## 5. Discussion

This study aimed to identify whether and why the two seemingly unrelated behaviors among young people—media multitasking and the impulse to buy—are related. An online survey was administered to 993 college students located in three regions in Taiwan. The findings of the moderated mediation model extended the S-O-R framework by demonstrating its applicability to media multitasking. Furthermore, the findings suggested that in addition

**Table 2**  
Mediation model ( $n = 993$ ).

Predictor	B	SE	t-value	p-value
Model A: Mediator variable model (Information utility)				
Media multitasking	0.19	0.02	8.01	0.00
Model B: Mediator variable model (Social presence)				
Media multitasking	0.52	0.02	22.41	0.00
Model C: Dependent variable model (The impulse to buy)				
Media multitasking	0.42	0.04	11.45	0.00
Information utility	0.27	0.04	6.77	0.00
Social presence	0.14	0.04	3.62	0.00

**Table 3**  
Indirect effect of media multitasking on the impulse to buy ( $n = 993$ ).

Mediator	Effect	Boot SE	Boot 95% CI
Information utility	0.05	0.01	[0.03, 0.07]
Social presence	0.07	0.02	[0.03, 0.12]

**Table 4**  
Moderated mediation model ( $n = 993$ ).

Predictor	B	SE	t-value	p-value
Model A: Mediator variable model (Information utility)				
Media multitasking	0.19	0.02	8.01	0.00
Model B: Mediator variable model (Social presence)				
Media multitasking	0.52	0.02	22.41	0.00
Model C: Dependent variable model (The impulse to buy)				
Media multitasking	0.36	0.04	10.10	0.00
Information utility	0.19	0.09	2.09	0.04
Social presence	0.28	0.08	3.38	0.00
IBT	0.42	0.16	2.67	0.01
Information utility × IBT	0.02	0.03	0.49	0.63
Social presence × IBT	−0.07	0.03	−2.63	0.01

**Table 5**  
Conditional indirect effect of media multitasking at different values of IBT ( $n = 993$ ).

Mediator	IBT	Effect	Boot SE	Boot 95% CI
Information utility	1.64	0.04	0.01	[0.02, 0.06]
	2.77	0.04	0.01	[0.03, 0.06]
	3.90	0.05	0.01	[0.03, 0.07]
Social presence	1.64	0.09	0.03	[0.03, 0.15]
	2.77	0.05	0.02	[0.01, 0.10]
	3.90	0.01	0.02	[−0.03, 0.06]

Note: Values for IBT are the mean and plus/minus one standard deviation from the mean.

to having a direct influence (Flight et al., 2012; Liu et al., 2013), IBT influences the impulse to buy by moderating the mediation effect of perceived social presence between media multitasking and the impulse to buy.

Specifically, the results showed that perceived information utility was a significant mediator between media multitasking and the impulse to buy. Media multitasking situations (S) trigger an individual's perceived information utility (O), which subsequently affects the impulse to buy (R). The findings articulated the S-O-R framework by being consistent with the information-process bias perspective for habitual media multitaskers (Lin, 2009; Ophir et al., 2009) and with source magnification theory (Harkins & Petty, 1981a, 1981b, 1987; Moore & Reardon, 1987; Moore et al., 1989). Media multitasking situations trigger perceived information utility because habitual media multitaskers prefer to attend to and process greater amounts of information and because consecutive sources are independent. Independent sources motivate searching and processing favorable product information on the Internet and enhance the impulse to buy.

This study also found that IBT is not a significant moderator of the mediation effect of perceived information utility. Regardless of IBT level, media multitasking enhances the impulse to buy through the mediation of perceived information utility. These findings coincide with those of Lins et al. (2015) by showing that higher- and lower-IBT individuals are not significantly different in terms of their need for cognition. They rely on perceived information utility to reduce uncertainty, which leads to a stronger urge to buy impulsively.

In addition, the results showed that perceived social presence was a significant mediator between media multitasking and the impulse to buy, and IBT was a significant moderator of the mediation effect. The findings elucidate the S-O-R framework by extending social impact theory. Social impact theory suggests that increasing the strength and number of social sources while reducing their distance to an individual can enhance the impulse to buy. The findings extend social impact theory by showing that media multitasking positively influences the impulse to buy through the mediation of perceived social presence for individuals with lower or moderate levels of IBT, but not for individuals with higher levels of IBT. According to Kacen and Lee (2002), Sharma et al. (2014), Cai et al. (2015), and Lucas & Koff, 2014, individuals with higher IBT are more likely to be individualists and narcissists, whereby individuals focus on themselves and ignore the influences of others surrounding them. The findings also support Youn and Faber (2000) because individuals with higher IBT are concerned only with the quality of external cues, while individuals with lower IBT are more concerned about making a smart purchase and referencing others' opinions, notwithstanding the fact that they are virtual sources in the media multitasking context.

### 5.1. Managerial implications

Based on the moderated mediation model, marketers who target young people should realize that as young people engage in media multitasking more frequently, they are more likely to experience a stronger urge to buy impulsively as a result of the influences of perceived information utility and social presence from brand-related messages across media. Marketers should provide brand-related information across multiple platforms on the Internet and ensure that those virtual sources are perceived as independent to yield favorable effects, according to source magnification theory and social impact theory.

Conversely, media literacy educators can help young people become aware of the influence of media multitasking on the impulse to buy. They can familiarize young people with the psychological mechanisms activated when they simultaneously watch television and browse the Internet. They can also increase the persuasion knowledge of young people by demonstrating that information from virtual social sources may have persuasion intent (Friestad & Wright, 1994; Ham, Nelson, & Das, 2015), and individuals have more difficulty making rational decisions when media multitasking (Kazakova, Cauberghe, Pandelaere, & De Pelsmacker, 2015) and impulse buying (Chen et al., 2016). This information should help young people stay alert and become smarter and more responsible online shoppers.

### 5.2. Limitations and future research

This study took several steps to increase data quality, such as recruiting respondents from three universities, checking the validity of respondents and responses, and applying valid and reliable measures. Nonetheless, the respondents in the study were not randomly drawn, and only four common television-Internet media multitasking situations involving product information were involved. Thus, the findings should be generalized with care.

Previous studies have been concerned with the negative effects of media multitasking on various aspects of personal well-being among young people such as depression and social anxiety (Becker, Alzahabi, & Hopwood, 2013; Yang, Xu, & Zhu, 2015). Well-being could be negatively affected as a result of impulse-buying behavior. Future studies should explore the possible relationships among media multitasking, impulsive buying behavior, and negative well-being among young people.

## 6. Conclusion

As young people engage in media multitasking more frequently, their urge to buy things on impulse becomes stronger. Media multitasking situations enhance the impulse to buy through the mediation of high perceived information utility and social presence for individuals with lower or moderate IBT. Media multitasking situations, however, enhance the impulse to buy through the mediation of high perceived information utility for individuals with higher IBT. The moderated mediation model extends the S-O-R framework and supports the moderating influence of IBT.

## Author information

Yuhmiin Chang (PhD, University of Missouri-Columbia) is an associate professor in the College of Communication, National Chengchi University of Taiwan, Republic of China.

## Acknowledgement

The project is funded by "Aim for the Top University Plan" of the National Chengchi University, Ministry of Education, and Ministry of Science and Technology (MOST), Taiwan, R.O.C.

## References

- eMarketer. (2015). *Millennials admit to impulse shopping: More than 80% of millennials have made an impulse purchase*. <http://www.emarketer.com/Article/Millennials-Admit-Impulse-Shopping/1011834#sthash.5aZFeqWB.dpuf> (Accessed 08.10.2015).
- Beatty, S. E., & Ferrell, M. E. (1998). Impulse buying: Modeling its precursors. *Journal of Retailing*, 74, 169–191.
- Becker, M. W., Alzahabi, R., & Hopwood, C. J. (2013). Media multitasking is associated with symptoms of depression and social anxiety. *Cyberpsychology, Behavior, and Social Networking*, 16, 132–135.
- Beneke, J., Flynn, R., Greig, T., & Mukaiwa, M. (2013). The influence of perceived product quality, relative price and risk on customer value and willingness to buy: A study of private label merchandise. *Journal of Product & Brand Management*, 22, 218–228.
- Biocca, F., Harms, C., & Burgoon, J. K. (2003). Toward a more robust theory and measure of social presence: Review and suggested criteria. *Presence*, 12, 456–480.
- Bloch, P. H., Sherrell, D. L., & Ridgway, N. M. (1986). Consumer search: An extended framework. *Journal of Consumer Research*, 13, 119–126.
- Bracken, C. C., & Botta, R. (2010). Telepresence and television. In C. C. Bracken, & P. D. Skalski (Eds.), *Immersed in media: Telepresence in everyday life* (pp. 39–62). New York, NY: Routledge.
- Brasel, S. A., & Gips, J. (2011). Media multitasking behavior: Concurrent television and computer usage. *Cyberpsychology, Behavior, and Social Networking*, 14, 527–534.
- Cacioppo, J., & Petty, R. (1982). The need for cognition. *Journal of Personality and Social Psychology*, 42, 116–131.
- Cai, H., Shi, Y., Fang, X., & Luo, Y. L. (2015). Narcissism predicts impulsive buying: Phenotypic and genetic evidence. *Frontiers in Psychology*, 6, 881.
- Chang, Y. (2015). Media multitasking across generations: Simultaneous mobile internet and television usage behaviors and motives. *Mass Communication Research*, 124, 83–116.
- Chen, J. V., Su, B.-c., & Widjaja, A. E. (2016). Facebook C2C social commerce: A study of online impulse buying. *Decision Support Systems*, 83, 57–69.
- Duff, B. R.-L., Yoon, G., Wang, Z., & Anghelcev, G. (2014). Doing it all: An exploratory study of predictors of media multitasking. *Journal of Interactive Advertising*, 14, 11–23.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, IL: Row Peterson.
- Flight, R. L., Rountree, M. M., & Beatty, S. E. (2012). Feeling the urge: Affect in impulsive and compulsive buying. *The Journal of Marketing Theory and Practice*, 20, 453–466.
- Friestad, M., & Wright, P. (1994). The persuasion knowledge model: How people cope with persuasion attempts. *Journal of Consumer Research*, 21, 1–31.
- Fulk, J., Steinfield, C. W., Schmitz, J., & Power, J. G. (1987). A social information processing model of media use in organizations. *Communication Research*, 14, 529–552.
- Gefen, D., & Straub, D. W. (2004). Consumer trust in B2C e-Commerce and the importance of social presence: Experiments in e-Products and e-Services. *Omega*, 32, 407–424.
- Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications*, 1, 147–166.

- Ham, C.-D., Nelson, M. R., & Das, S. (2015). How to measure persuasion knowledge. *International Journal of Advertising*, 34, 17–53.
- Harkins, S. G., & Petty, R. E. (1981). Effects of source magnification of cognitive effort on attitudes: An information-processing view. *Journal of Personality and Social Psychology*, 40, 401–413.
- Harkins, S. G., & Petty, R. E. (1981). The multiple source effect in persuasion: The effects of distraction. *Personality and Social Psychology Bulletin*, 7, 627–635.
- Harkins, S. G., & Petty, R. E. (1987). Information utility and the multiple source effect. *Journal of Personality and Social Psychology*, 52, 260–268.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: The Guilford Press.
- Hsu, H.-Y., & Tsou, H. T. (2011). The effect of website quality on consumer emotional states and repurchases intention. *African Journal of Business Management*, 5, 6194–6199.
- Huh, J., DeLorme, D. E., & Reid, L. N. (2004). The information utility of DTC prescription drug advertising. *Journalism & Mass Communication Quarterly*, 81, 788–806.
- Jeffrey, S. A., & Hodge, R. (2007). Factors influencing impulse buying during an online purchase. *Electronic Commerce Research*, 7, 367–379.
- Jeong, S.-H., & Fishbein, M. (2007). Predictors of multitasking with media: Media factors and audience factors. *Media Psychology*, 10, 364–384.
- Jiang, Z., Chan, J., Tan, B. C., & Chua, W. S. (2010). Effects of interactivity on website involvement and purchase intention. *Journal of the Association for Information Systems*, 11, 34–59.
- Kacen, J. J., & Lee, J. A. (2002). The influence of culture on consumer impulsive buying behavior. *Journal of Consumer Psychology*, 12(2), 163–176.
- Kazakova, S., Cauberghe, V., Pandelaere, M., & De Pelsmacker, P. (2015). Can't see the forest for the trees? The effect of media multitasking on cognitive processing style. *Media Psychology*, 18, 425–450.
- Kononova, A., Zazorina, T., Diveeva, N., Kokoeva, A., & Chelokyan, A. (2014). Multitasking goes global: Multitasking with traditional and new electronic media and attention to media messages among college students in Kuwait, Russia, and the USA. *International Communication Gazette*, 76, 617–640.
- Kushniryk, A., & Levine, K. J. (2012). Impact of multitasking on listening effectiveness in the learning environment. *The Canadian Journal for the Scholarship of Teaching and Learning*, 3, 7.
- Latané, B. (1981). The psychology of social impact. *American Psychologist*, 36, 343–356.
- Lewis, R. A., & Reiley, D. H. (2013). Down-to-the-minute effects of super bowl advertising on online search behavior. In *Proceedings from the fourteenth ACM conference on electronic commerce*. New York, NY: ACM.
- Liao, C., To, P.-L., Wong, Y.-C., Palvia, P., & Kakhki, M. D. (2016). The impact of presentation mode and product type on online impulse buying decisions. *Journal of Electronic Commerce Research*, 17, 153–168.
- Liaukonyte, J., Teixeira, T., & Wilbur, K. C. (2015). Television advertising and online shopping. *Marketing Science*, 34, 311–330.
- Lim, L., & Rashad Yazdanifard, P. (2015). What internal and external factors influence impulsive buying behavior in online shopping? *Global Journal of Management and Business Research*, 15(5).
- Lin, C. (2000). Information utility, reader interest, publication rating and student newspaper readership. *Journal of the Association for Communication Administration*, 29, 304–318.
- Lin, L. (2009). Breadth-biased versus focused cognitive control in media multitasking behaviors. *Proceedings of the National Academy of Sciences of the United States of America*, 106, 15521–15522.
- Lins, S., Dóka, Á., Bottequin, E., Odabašić, A., Pavlović, S., Merchán, A., et al. (2015). The effects of having, feeling, and thinking on impulse buying in European adolescents. *Journal of International Consumer Marketing*, 27, 414–428.
- Liu, Y., Li, H., & Hu, F. (2013). Website attributes in urging online impulse purchase: An empirical investigation on consumer perceptions. *Decision Support Systems*, 55, 829–837.
- Lucas, M., & Koff, E. (2014). The role of impulsivity and of self-perceived attractiveness in impulse buying in women. *Personality and Individual Differences*, 56, 111–115.
- Luo, X. (2005). How does shopping with others influence impulsive purchasing? *Journal of Consumer Psychology*, 15, 288–294.
- Madhavaram, S. R., & Laverie, D. A. (2004). Exploring impulse purchasing on the internet. *Advances in Consumer Research*, 31, 59–66.
- Moore, D. J., & Reardon, R. (1987). Source magnification: The role of multiple sources in the processing of advertising appeals. *Journal of Marketing Research*, 24, 412–417.
- Moore, D. J., Reardon, R., & Mowen, J. C. (1989). Source independence in multiple source advertising appeals: The confederate effect. *Advances in Consumer Research*, 16, 719–722.
- Ning Shen, K., & Khalifa, M. (2012). System design effects on online impulse buying. *Internet Research*, 22, 396–425.
- Ophir, E., Nass, C., & Wagner, A. D. (2009). Cognitive control in media multitaskers. *Proceedings of the National Academy of Sciences of the United States of America*, 106, 15583–15587.
- Oviedo, V., Tornquist, M., Cameron, T., & Chiappe, D. (2015). Effects of media multitasking with Facebook on the enjoyment and encoding of TV episodes. *Computers in Human Behavior*, 51, 407–417.
- Parboteeah, D. V., Valacich, J. S., & Wells, J. D. (2009). The influence of website characteristics on a consumer's urge to buy impulsively. *Information Systems Research*, 20, 60–78.
- Reeves, B., & Nass, C. (1996). *The media equation: How people treat computers, television, and new media like real people and places*. Stanford, CA: CSLI Publications and Cambridge University Press.
- Schierhorn, C., Wearden, S. T., Schierhorn, A. B., Tabar, P. S., & Andrews, S. C. (1999). What digital formats do consumers prefer? *Newspaper Research Journal*, 20, 2–19.
- Sharma, P., Sivakumaran, B., & Marshall, R. (2014). Looking beyond impulse buying: A cross-cultural and multi-domain investigation of consumer impulsiveness. *European Journal of Marketing*, 48(5/6), 1159–1179.
- Ward, M. R., & Morganosky, M. (2000). Online consumer search and purchase in a multiple channel environment. *Urbana*, 51, 61801–63681.
- Woodworth, R. S. (1929). *Psychology*. Oxford: Holt, 2nd Rev.
- Yahoo. (2013). *Yahoo! e-commerce report: The coming of m-commerce*. <https://marketing.tw.campaign.yahoo.net/emarketing/searchMarketing/main/S01/B03/C02?id=757> Accessed 08.10.2015.
- Yang, X., Xu, X., & Zhu, L. (2015). Media multitasking and psychological wellbeing in Chinese adolescents: Time management as a moderator. *Computers in Human Behavior*, 53, 216–222.
- Youn, S., & Faber, R. J. (2000). Impulse buying: Its relation to personality traits and cues. In S. J. Hoch, & R. J. Meyer (Eds.), *NA-advances in consumer research* (Vol. 27, pp. 179–185). Provo, UT: Association for Consumer Research.
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *The Journal of Marketing*, 52, 2–22.