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경영학 석사 학위논문

Paying the Price for Time:

The Moderating Role of Need for Status and

Artificial Intelligence

시간확보를 위한 구매행동이 소비자 감정에
미치는 영향: 지위욕구와 인공지능의 조절효과

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Paying the Price for Time: The Moderating Role of Need for Status and Artificial Intelligence

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Abstract

Paying the Price for Time: The Moderating Role of Need for Status and Artificial Intelligence

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Prior research on time-saving has focused on the benefits time-saving services bring to individuals' happiness and stress reduction. Yet, little research has delved into different underlying mechanisms as well as potential downsides of buying time. To fill in the gap, the current research looks into the underlying role of inner status appraisal along with the moderating role of need for status (NFS) and Artificial Intelligence (AI).

By shifting the focus from others to oneself, status is defined and portrayed in an unconventional perspective. Study 1 reveals that making a time-saving purchase triggers a marginally higher perceived inner status. However, Study 2 reveals the opposite pattern implying that time-saving purchase leads to significantly lower perceived inner status after all, resulting in decreased affect balance. Based on the contradicting results of Study 1 and 2 conducted with one's need for status held as a moderator, an additional experiment (Study 3) is carried

out. Study 3, in particular, examines the moderating role of service provider types: Artificial Intelligence (AI) and human being (non-AI). Together, results suggest that making a time-saving purchase of a certain service provider type alters ones' perceived inner status, which in turn leaves an impact on affect balance. This research makes theoretical contributions to time, happiness, and consumption experience literature by investigating novel boundary conditions of positive affect derived from making a time-saving purchase.

Keywords: Time-saving Purchase, Positive Affect, Inner Status Appraisal, Need for Status (NFS), Service Provider Type, Artificial Intelligence (AI)

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1. Introduction

Nowadays, many people seek out for more time, feeling they do not have enough of it and are somewhat in a rush. Even when we just take a quick look around us, we can easily spot people overloaded with work. It has become a natural phenomenon for one to become frantic and thus cry out for more time. On the bright side, there seems to be a way to obtain more time and happiness by having one's money well-spent.

When it comes down to money, it is all about the opportunity cost rather than just the money itself. Thus, the amount of money one possesses is not as important as the way in which the money is utilized. Rationally speaking, money is mostly used in exchange for things that would bring greater meaning or happiness into one's life. Whillans et al. (2017) indicate that spending money to get hold of extra spare time provides a buffer against detrimental effects yielding from a "rising sense of time scarcity." In the midst of perceived time famine, "time-buying consumer (Berry 1979)" purchases goods and services that would lend a helping hand for the sake of earning their own time.^① Having the extra time obtained from the trade-off made with money, one's well-being and life satisfaction increase due to subjectively lowered time pressure, thereby leading to greater happiness (Whillans et al. 2017).

Why is time-saving purchase associated with happiness? Although prior studies have been conducted to establish the correlation between time-saving purchase and happiness, little research has moved forward on analyzing the

^① Buying time often involves looking ahead in the future. However, according to Zauberaman and Lynch (2005), people tend to think of future time as abundant in the face of time famine today. On that account, Whillans et al. (2018) demonstrate how helping people to acknowledge the reality – that their busy status would most likely be carried on in the future – motivates them to buy future time.

underlying mechanisms for this relation. Could making such purchase allow one to pick up some kind of signal about oneself? In the current article, one's appraisal of inner status is examined as a possible mediator. According to Bellezza et al. (2017), busyness has become a symbol of status in the eyes of others. Would this apply the same way for the ones who recognize themselves as busy? Buying resources related to time-saving implies that the person is undergoing time scarcity. Hence, it is likely that one would be reminded of their busy status at the moment of making a time-saving purchase, and such reminders would extend throughout his or her consumption experience.

What's more, the positive relationship between time-saving purchase and happiness can be affected by one's level of need for status (NFS). Among the ones who make a time-saving purchase, people who have a high NFS would experience greater positive affect, whereas people who have a low NFS would experience attenuated positive affect. Based on one's standpoint, paying the price for time may not always lead one to happiness (i.e., positive affect). In addition, the correlation between time-saving purchase and happiness may also be affected by the type of service provider^②. Time-saving service provided in a form of Artificial Intelligence (AI) would lead to greater affect balance, whereas the service provided by another human being would not be linked to positive affect since one may undergo an emotion of guilt^③.

^② Service provider type is included as a new moderator in the additional analysis (Study 3).

^③ Outsourcing for the sake of earning extra time by putting one's personal task to someone else may cause one to experience a guilty conscience, especially when being aware of a service provider who would be involved (i.e., a salient service provider) (Whillans et al. 2018).

2. Theoretical Background and Hypotheses

2.1 Time scarcity and buying time

In modern days, one of the widespread phenomenon people face is time shortage. Time scarcity has indeed been taking over the lives of many. Because of having a lack of time to do things they would prefer doing or just simply running out of time in general, people become pressed for time. This “time famine” (Perlow, 1999) – the state of mind sensing a time shortage on a regular basis (Goodin et al. 2005; Robinson and Godbey, 2010) – has become quite a typical routine, causing one to experience a fair amount of stress. Sentiments coming from time stress are associated with undesirable side effects such as reduced happiness, increased anxiety, and insomnia (Kasser and Sheldon, 2009; Roxburgh, 2004).

Many times, people feel like they are being rushed regardless of where they stand: whether they are married or single, or at a state of working as an employee or studying and doing research. When people feel like they do not have enough time, they become pressed for time which then makes them become stressed out. The good news is that, in the present-days, there exist many different time-saving services for people to request for. A few of the examples to mention are: cleaning robots, grocery delivery services, household maintenance services, YouTube Premium, pick-up services for taxis, personal or virtual assistants, private chefs, and so on. By having the extra time obtained through the trade-off made with money, people tend to be relieved from the time stress, which then leads to increased well-being and life satisfaction.

2.2 Time-saving Purchase Triggers Positive Affect

Would paying attention to time make a difference in how people strive to achieve their personal happiness? The subjective sense of the coming times plays an essential role in human motivation (Carstensen, 2006). As Benjamin Franklin stated, “Remember time is money,” time is valuable just like money. Moving forward with this idea, time may be even more valuable than money for people who make time-saving purchases. By implicitly triggering off the construct of time, people can become motivated to take actions that are linked to greater happiness – spending more quality time^④ with those around them and bringing down their work time (Mogilner, 2010).

Time is inherently scarce. However, being aware of the nature of the scarcity of time can make us perceive it as more valuable.^⑤ According to Dr. Mogilner (2010), centering one’s attention to time is necessary to bring an increase in happiness. Shifting attention from money to time drives individuals to divide up their time in happier ways (Mogilner, 2010). Likewise, when time is perceived as constrained, people tend to focus on their feeling states and attach greater importance in optimizing psychological well-being (Carstensen, 2006). The psychological needs fulfillment may be attained through “time affluence,” leading to well-being (Kasser and Sheldon, 2009). As a consequence, a person who makes a time-saving purchase will perceive relative affluence of time after obtaining that extra hour from making such purchase, however long or short it may be – thereby leading to increased satisfaction in life.

^④ Being able to spend quality time with a significant other by making time-saving purchases led to a favorable outcome - greater relationship satisfaction (Whillans et al. 2018).

^⑤ Scarcity may increase savoring (Kurtz, 2008), as feelings of perceived abundance may work against cherishing delightful experiences (Quoidbach et al. 2010)

Fortunately, time-saving services have been made increasingly accessible with the growth of the sharing economy, and by utilizing them, people feel less end-of-day pressure (Whillans et al. 2017). Time stress is sentimentally associated with reduced well-being (e.g., lower happiness) (Kasser and Sheldon, 2009; Roxburgh, 2004; Hoge, 2009). Utilizing money to secure extra spare time can protect one from undergoing undesirable consequences of time pressure held upon one's satisfaction in life (Whillans et al. 2017). Even after having wealth controlled for, getting hold of more spare time remained to be linked to greater happiness and life satisfaction (Kasser and Sheldon, 2009). According to the research on the "buffering hypothesis," picking up social support can safeguard people from facing the unfavorable aftermath of stress (Cohen and Wills, 1985). By making a time-saving purchase, one would receive the social support needed to get through the days full of ordinary demands. Consequently, people making use of money to gain access to more time would experience the attenuated interconnection between time stress and reduced life satisfaction (Whillans et al. 2017).

However, here is the real question beneath the surface: Would time-saving purchase always lead to greater happiness? Throughout the paper, I intend to test and reveal the underlying mechanism of inner status appraisal along with moderating roles of one's need for status and Artificial Intelligence.^⑥

^⑥ Prior research of Whillans et al. (2018) reveals that individuals go through the feeling state of guilt when involving a salient (vs. non-salient) service provider to outsource time. Time-saving purchases that contribute to the feelings of guilt break the positive relationship between time-saving purchase and happiness.

Based on the results of Study 1 and 2, an additional experiment (Study 3) is conducted in order to investigate the possible mechanism of Artificial Intelligence (AI).

2.3 Need for Status

All individuals seem to have some kind of need for status (NFS) within themselves, even as a form of hidden motives. Although the motive for status may be universal, the degree to which individuals desire to obtain status may vary. Research has found that a certain signal a product implies can influence consumers' behavior (Wansink and Van Ittersum, 2003). In such consumer settings, the NFS leaves an effect on consumers' preferences in various ways (Mandel et al. 2006; Ordabayeva and Chandon, 2011). It has been shown that NFS is positively associated with consumers' fondness toward lavish consumption of luxury goods (Han, Nunes, and Dre`ze, 2010). Typically referred to as a motivation to gain respect or warm approval by others (Ridgeway and Correll, 2006), NFS has been claimed to be the primary motivating force in human behavior (Berger et al. 1980; Bourdieu, 1984). With the desire to obtain and demonstrate status as well as to gain greater social and individual benefits (Han et al. 2010; Dubois and Laurent, 1996), people engage in activities that signal status.

Furthermore, people tend to have an urge to set themselves apart from others (Snyder and Fromkin, 1980). Such individual-drive theories (Snyder and Fromkin, 1977; Tian et al. 2001; see also Lynn and Harris 1997) demonstrate that individuals with greater needs for uniqueness incline toward products holding unique features (Tian et al. 2001; Tian and McKenzie, 2001). They also suggest that people aim to attain a sense of difference when encountered with situational pressure of making them feel unduly similar (Snyder and Fromkin, 1980). This stream of theories led to a finding that people often strive to differentiate themselves as a means to communicate their individuality to others (Berger and

Heath, 2007). Along the lines of need for uniqueness, NFS may work in a similar way in which individuals strive to signal their status to others. Those who hold greater NFS would prefer products that hold up a sense of status, even in an implicit manner.

Taking things further, the conception of NFS may be associated with a desire to fulfill such needs. People who hold a high NFS, compared to the ones who hold a low NFS, may be more prone to look for things that would satisfy the needs. On that account, making purchases that involve lessening the burden off of individuals by taking care of work on their behalf would satisfy their NFS. Thus, I propose that time-saving purchases are more likely to promote positive affect for individuals with a high NFS (vs. low NFS).

H1: Individual level of NFS will moderate the positive effect of time-saving purchase on affect balance.

H1a: When making a time-saving purchase, one with a high NFS (vs. low NFS) will experience greater positive affect.

H1b: When making a time-saving purchase, one with a low NFS (vs. high NFS) will experience attenuated positive affect.

2.4 Inner Status Appraisal

Time-saving can work as a signal of status. Status symbolizes the respect one holds in the eyes of others (Magee and Galinsky, 2008), and it can be regarded as “social status” and “financial resources” (Bourdieu 1984; Scott, Mende, and Bolton, 2013; Veblen, 1899/2007). Through a mechanism of holding desired characteristics of human capital as well as being perceived as sought-after and scarce, busyness has become a positive symbol of status (Bellezza et al. 2017). Accordingly, working long hours with little leisure time has become quite a powerful status symbol. Along with this finding, it has also been revealed that regardless of one’s true level of busyness, the public use of products and services that saves time can convincingly signal status to others (Bellezza et al. 2017).

If so, could the signal of status point toward oneself? Setting aside how one is portrayed in the eyes of others, having to perceive oneself as busy and in demand could possibly lead to self-appraisal of one’s own status. Matz et al. (2016) reveal that purchases manifesting one’s self allow one to get hold of psychological benefits. As such, spending money on things that are in harmony with self-concept as well as goods that bring favorable self-reflection may amplify one’s happiness (Aknin et al. 2018). Such psychological fit allows guidance to individuals in order for them to present themselves in a way that their self-concepts are sustained and built up (Grubb and Grathwohl, 1967; Lecky, 1945; Levy, 1959).

Individuals cultivate their public appearances in a strategic way through the process of self-monitoring (Gangestad and Snyder, 1985, 1991; Snyder, 1974, 1979, 1987). People can become privately self-conscious by being self-reflective as well as by focusing on their inner thoughts, feelings, and motives (Fenigstein et al.

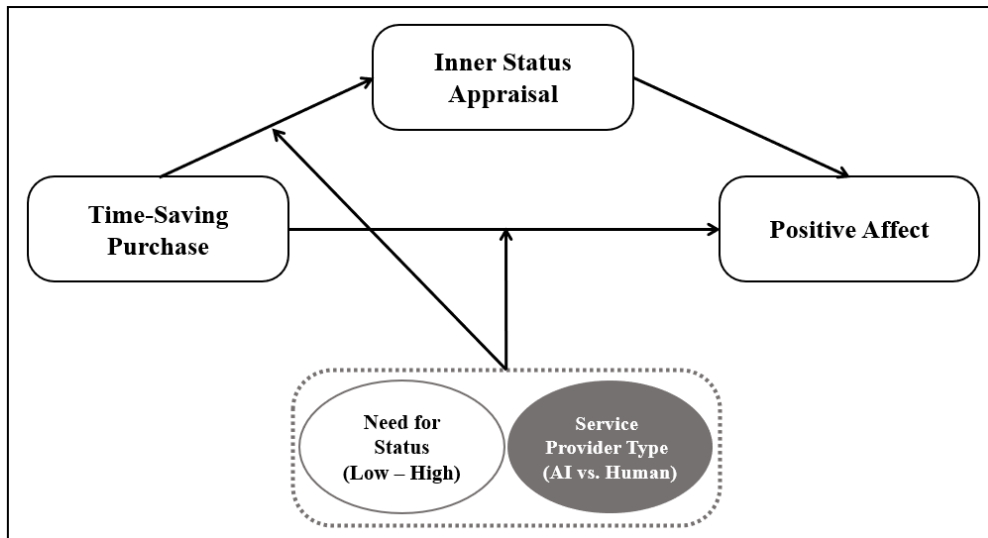
1975; Buss and Scheier, 1976). Rather than focusing on others' perceptions, shifting the focus of attention to oneself may trigger the person to be privately self-conscious and thus lead them to become more self-appraising. Thus, by the action of buying time, one would become attentive to one's busy status and consequently view oneself as a valuable resource, ultimately leading to higher inner status appraisal.

Prior research (Whillans et al. 2017) makes mention of the possibility of time-saving purchases resulting in individuals to feel higher in social status themselves. Alongside this, it has been found that status inferences can be driven by the subtle use of products and services that are time-saving. The current research, however, proposes that the status inferences come from the eyes of oneself rather than the eyes of others. By looking into the mediating mechanism of inner status being appraised, we will observe how one's feeling state is affected by making a time-saving purchase.

H2: Inner status appraisal is a mechanism of the interactive effect between time-saving purchase and need for status on positive affect.

2.5 Research Model

Figure 1



Note. “Service provider type” is added as a new moderator for our additional analysis: Study 3. Thus, an original conceptual model established with “need for status (NFS)” as a moderator is reformed with a new variable involving Artificial Intelligence (AI).

3. Empirical Studies

3.1 Overview

In the present research, three^⑦ experiments are implemented to test each hypothesis. All experiments are held as a scenario-based form to confirm the effect of making a time-saving purchase as well as to examine the underlying mechanism of the relationship between time-saving purchase and positive affect. Additionally, the moderating roles of need for status (NFS) and Artificial Intelligence (AI)^⑧ are examined. Time-saving manipulation takes place in various forms throughout the studies.

Across the studies, our findings of Study 1 and Study 2 show a contradicting pattern of results. Study 1 reveals that time-saving experience among the ones who hold high NFS (vs. low NFS) leads to significantly greater positive affect. However, Study 2 indicates that time-saving experience generates significantly lower status appraisal compared to non-timesaving experience, leading to decreased positive affect. Therefore, Study 3 inquires into probable explanations for the opposite pattern of results and distinguishes the moderating role of AI.

^⑦ Two experiments were conducted along with one additional experiment for further analysis (involving AI), as mentioned earlier.

^⑧ Examined in additional analysis, Study 3.

3.2 Study 1

Study 1 is designed to examine a moderating role of NFS in the relationship between time-saving purchase and positive affect (H1) as well as to test a mediating effect of inner status appraisal (H2). In specific, the aim is to investigate whether participants who make a time-saving purchase undergo relatively high self-appraisal of status, which would then lead them to positive affect. Participants who hold a high NFS (vs. low NFS) would be more likely to experience such proposition.

For the quality of data, two attention checks were also included in between the questions as a screen-out process.

Method

Participants and design. A sample of 100 individuals^⑨ recruited through Prolific Academic (62% women; $M_{age} = 28.7$, range = 18-64) took part in the online experiment with the compensation of £6.68/hr. Study 1 carries out one-factor (time-saving purchase: yes vs. no) between-subjects design as well as 2 (time-saving purchase: yes vs. no) by continuous (NFS: low – high) design.

Procedure. Participants completed the study on their personal devices (computer/mobile/tablet) and were randomly assigned to one of the following conditions: cleaning robot (time-saving purchase), vacuum cleaner (non-timesaving purchase). Before the random assignment, participants in both conditions were first asked to indicate their level of NFS.

Those in the time-saving purchase condition were instructed, “Imagine

^⑨ To our surprise, every single one of the registered participants passed the attention checks included in between the questions and thus were qualified to take part in the survey.

yourself making a time-saving purchase that would allow you some spare time throughout your busy daily life. This \$200 cleaning robot (see Figure 2) will be more than enough of a help to take care of your chores, ultimately saving your precious free time after work.” Those in the non-timesaving condition were instructed, “Imagine buying yourself a \$200 vacuum cleaner (see Figure 3) that would be used during your free time after work.”

Subsequently, participants reported their affiliated affect balance by indicating how much the imaginary experience would have contributed to their positive emotions. Then, among other subsidiary measures regarding the experience, participants rated on separate scales how they felt about the purchase as a manipulation check (-3 = cost a lot of time overall, 3 = saved a lot of time overall). In a sequential manner, participants rated their perceived inner status. At the end of the survey, questions regarding demographics were measured.

Measures. *Need for status.* First, participants reported their level of NFS, consisted of the following 5 questions adopted from Eastman, Goldsmith, and Flynn’s (1999): “I would buy a product just because it has status,” “I am interested in new products with status,” “I would pay more for a product if it had status,” “The status of a product is irrelevant to me (reverse coded),” and “A product is more valuable to me if it has some snob appeal” (1 = strongly disagree, to 7 = strongly agree).

Affect balance. Then, participants were asked to report how much they have experienced each of the 12 following feelings: positive, negative, good, bad, pleasant, unpleasant, happy, sad, afraid, joyful, angry, contented (1 = very rarely/never, to 7 = very often/always; Diener et al. 2010).

Perceived inner status. MacArthur scale of subjective socioeconomic

status (Adler et al. 2000) and Dubois et al. (2012) scale were adopted.^⑩ For the MacArthur scale, participants were asked to place themselves in a 10 rungs ladder, representing where one stands in society with regard to money, status, and influence. Shortly after, participants were asked to indicate themselves in the following five dimensions^⑪: “I am respected” “I am honest” “I have high status” “I am nice” “I am attractive” in a 7-point scale (1 = strongly disagree, to 7 = strongly agree).

Manipulation checks. Participants were asked to report the degree to which they felt as if such purchase had cost or saved time (-3 = cost a lot of time overall, to 3 = saved a lot of time overall).

Demographic measures. In the end, participants were to indicate demographic measures including age, gender, ethnicity, education level, marital status, and total annual income.

Figure 2



LG CordZero R9MASTER Robotic Vacuum

^⑩ Two measures were averaged out.

^⑪ Dimensions consisted of two dimensions linked to status (“I have high status” & “I am respected”) and three dimensions separated from status (“I am honest” “I am nice” “I am attractive”). The sequence of the five dimensions was randomized.

Figure 3



Dyson DC39 Animal Canister Vacuum Cleaner

Results and Discussion

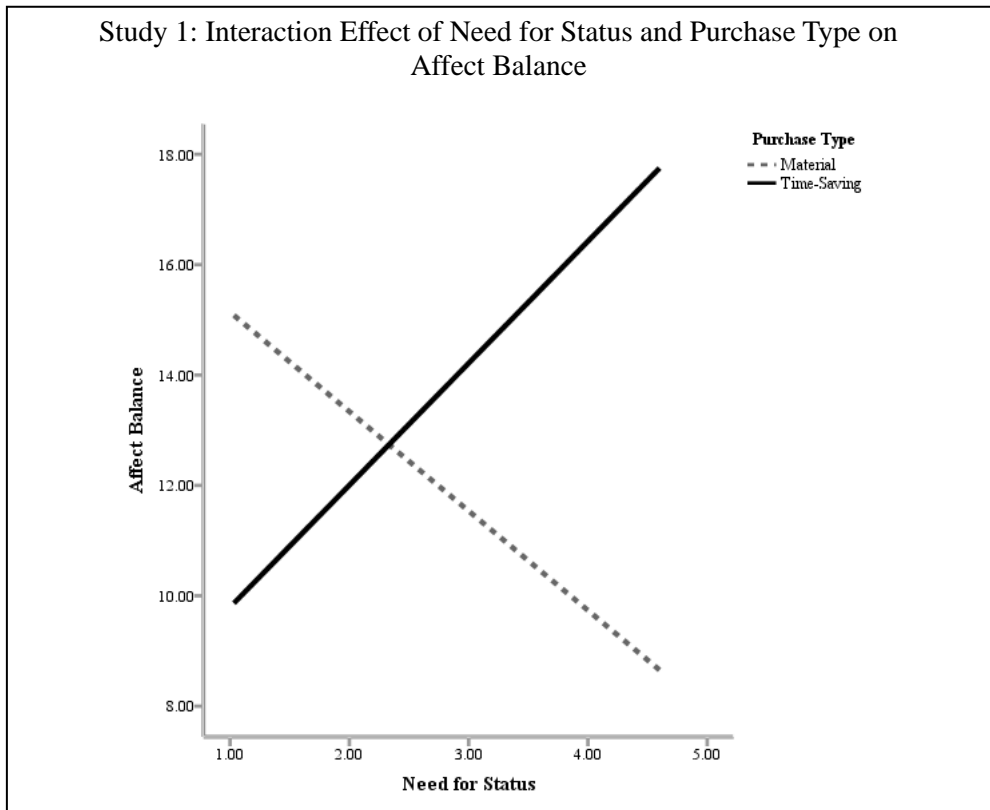
Manipulation Check. A one-way ANOVA on the perceived time-saving effect confirmed that participants in the time-saving condition ($M = 1.48$; $SD = 1.18$) perceived the experience as more time-saving than participants in the non-timesaving condition ($M = .94$; $SD = 1.46$; $F(1,106) = 4.43$, $p < .05$).

Regression Analysis. Model 8 in Hayes (2018) was employed with 5,000 resamples with time-saving purchase as an independent variable (X : 1 = no time-saving; vacuum cleaner, 2 = time-saving; cleaning robot), NFS as a moderator (W), affect balance as a dependent variable (Y), and perceived inner status as a mediator (M). The results showed that the effect of making a time-saving purchase on one's perceived status was marginally significant, ($t(96) = 1.67$, $p = .098$, $b = .47$). The interaction effect of time-saving purchase and NFS on one's perceived status was

also marginally significant ($t(96) = -1.69, p = .094, b = -.16$). These results implied a greater possibility that buying time triggers one's own status and that a personal characteristic of NFS comes into play.

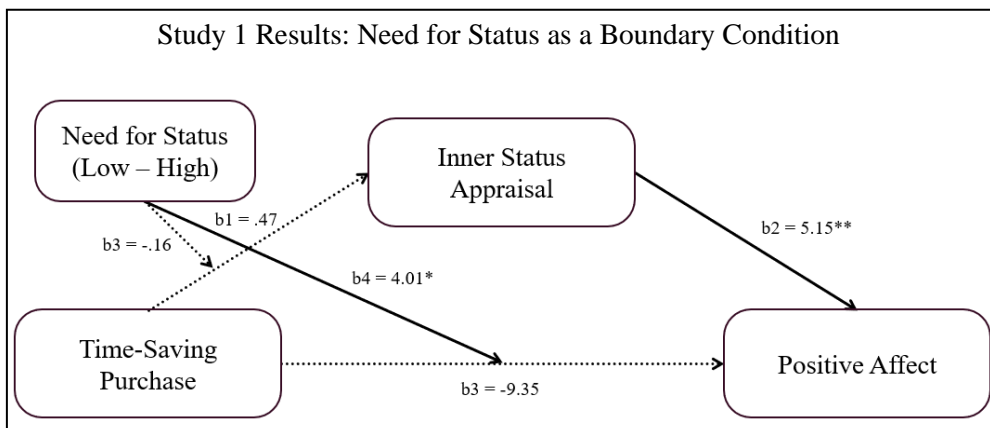
More importantly, the interaction effect of time-saving purchase and NFS on affect balance turned out to be significant, ($t(95) = 2.41, p = .018, b = 4.01$; see Figure 4). A floodlight analysis using the Johnson-Neyman technique (Spiller, Fitzsimons, Lynch, and McClelland, 2013) revealed that time-saving purchases significantly promoted positive affect among people whose NFS was at least above 3.79, ($t(95) = 1.99, p = .05, b = 5.86$). As one's NFS goes below 3.79, the effect of time-saving purchases on positive affect became non-significant. As shown, a time-saving purchase among the ones with a relatively high NFS (vs. low NFS) leads to significantly greater positive affect. Thus, H1a and H1b were supported. See Figure 5 for the full model.

Figure 4



Note. When making a time-saving purchase, participants with a relatively high NFS (vs. low NFS) experienced a significantly greater positive affect.

Figure 5



Note. Multiple-step mediation analysis with 5,000 bootstrap samples (model 8 in PROCESS; Hayes 2018). Coefficients significantly different from zero are indicated by asterisks (* $p < .05$; ** $p < .01$; *** $p < .001$).

$$\hat{M} = 3.80 + .47X + .33W - .155XW$$

$$\hat{Y} = 1.66 - 9.35X + 5.15M - 5.81W + 4.01XW$$

3.3 Study 2

Study 2 was conducted to replicate Study 1 by implementing different time-saving manipulation.

Method¹²

Participants and design. 105 participants recruited through Prolific Academic (76% women; $M_{age} = 28.8$, range = 18-74) took part in an online questionnaire with a compensation of £5.20/hr. Three participants failed to meet the qualification standard (two attention checks) and were thus excluded from the analyses (N = 102). As the previous study, Study 2 carries out one-factor (time-saving purchase: yes vs. no) between-subjects design as well as 2 (time-saving purchase: yes vs. no) by continuous (NFS: low – high) design.

Procedure. As in Study 1, participants first started off the questionnaire by indicating their level of NFS.

Time-saving manipulation. Then, participants were randomly assigned to imagine themselves in a situation of making a purchase that was either time-saving or non-timesaving. Unlike Study 1, the effect of AI is not covered in the current study.

Those in the time-saving purchase condition were given the following scenario:

“With a cost of \$200, imagine hiring a cleaning service for your house over the upcoming weekend. The housekeeper will do all household chores on your behalf, including laundry, vacuuming carpets and rugs,

¹² All other measures and procedures not mentioned remained the same as in Study 1.

sweeping and mopping hard floors, organizing the kitchen area, cleaning up the bathroom, etc.

After working all week, you will be free to spend some time on your own.”

Those in the non-timesaving condition were given the following scenario:

“Imagine spending your precious time cleaning your house over the upcoming weekend. You will do your laundry, sweep and mop the floor, vacuum and dust the place, organize the kitchen area, clean up the bathroom, along with any other remaining household chores that are needed to be done.

After working all week, you feel like you do not have enough time to rest and spend on your own.”

Perceived inner status. Then, participants were asked the following three questions adopted from Bellezza et al. (2017): “How would you rank the social status of yourself?” “Do you think you are financially wealthy?” “You have a high income level” on a 7-point scale (1 = Strongly Disagree, to 7 = Strongly Agree).

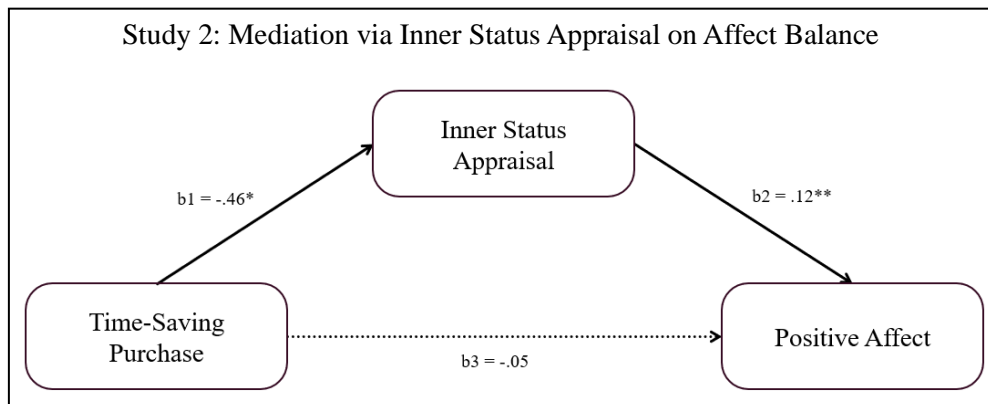
Results and Discussion

Manipulation Check. A one-way ANOVA on the perceived time-saving effect confirmed that participants in the time-saving condition ($M = 1.98$; $SD = 1.15$) perceived the experience as more time-saving than participants in the non-timesaving condition ($M = .18$; $SD = 1.45$; $F(1,100) = 48.3$, $p < .001$).

Mediation Analysis. A bootstrapping analysis using Model 4 from

PROCESS (Hayes, 2018) revealed a full mediation. The perceived inner status (M) completely mediated the effect of making time-saving purchase (X) on affect balance (Y) (Indirect effect = -.06, $SE = .03$, 95% CI [-.1242, -.0042]). However, the results revealed the opposite direction of the proposed mechanism. In specific, having the extra time obtained from making the time-saving purchase decreased the perceived inner status of oneself, ultimately leading to significantly lower affect balance. Participants' age and total annual income were controlled in order to rule out alternative explanations. Although age was not associated with greater inner status appraisal ($b = -.03$, $t(98) = -.324$, $p = .746$), a significant relation between income and inner status appraisal was found ($b = .223$, $t(98) = 5.378$, $p < .001$). The results are shown in Figure 6.

Figure 6



Note. Multiple-step mediation analysis with 5,000 bootstrap samples (model 4 in PROCESS; Hayes 2018). Coefficients significantly different from zero are indicated by asterisks (* $p < .05$; ** $p < .01$; *** $p < .001$).

$$\hat{M} = 3.12 - .46X - .03age + .22income$$

$$\hat{Y} = 3.58 - .05X + .12M - .02age - .007income$$

Moderated Mediation Analysis. A moderated mediation using 5,000 bootstrap samples (Model 7; Hayes, 2018) was conducted. Time-saving purchase

was included as the predictor (X: 1 = no time-saving; self-cleaning, 2 = time-saving; hired housekeeper,) one's affect balance as the outcome (Y), perceived inner status appraisal as the mediator (M), and NFS as the moderator (W). Again, participants' age and total annual income were controlled as covariates. A significant relation between income and inner status appraisal was found ($b = .219$, $t(96) = 5.398$, $p < .001$).

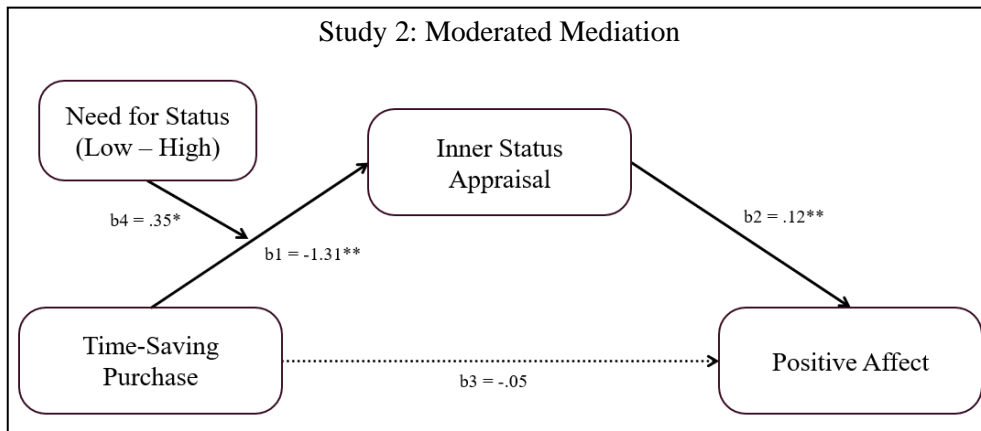
The moderated mediation turned out to be significant (Indirect = .04, $SE = .03$, 95% CI [.003, .104]). When making a time-saving purchase, one with a low NFS (vs. high NFS) experience a significantly lower inner status appraisal, thereby leading to decreased affect balance. To be more specific, when a person holds a low level of NFS ($-1 SD = -.96$), the indirect effect of time-saving purchase on affect balance through inner status appraisal was significant ($b = -.12$, $SE = .06$, 95% CI [-.25, -.02]). However, when a person holds a high level of NFS ($+1 SD = .08$), the indirect effect of time-saving purchase on affect balance was not significant ($b = .01$, $SE = .04$, 95% CI [-.059, .098]).

Further Discussion

While it has been demonstrated from Study 1 that making a time-saving purchase (vs. non-timesaving purchase) involving AI triggers marginally higher perceived inner status, the current study reveals the opposite pattern of results implying that time-saving purchase (vs. non-timesaving purchase) excluding the aspect of AI leads to significantly lower perceived inner status and thus decreased positive affect. By looking into the interaction effect, it is further revealed from this study that the opposite pattern of results is reinforced among the ones who hold a relatively low NFS (vs. high NFS).

Although the results revealed a rather opposite direction of the proposed mechanism, this study suggests that making time-saving purchase indeed leads one to experience inner status appraisal, thereby affecting one's affect balance. Reinforcing the proposed mechanism of inner status appraisal along with the interactive effect of time-saving purchase and need for status on affect balance, results of Study 2 revealed support for H2 as well as the general idea of H1. The full results are shown in Figure 7 and 8.

Figure 7

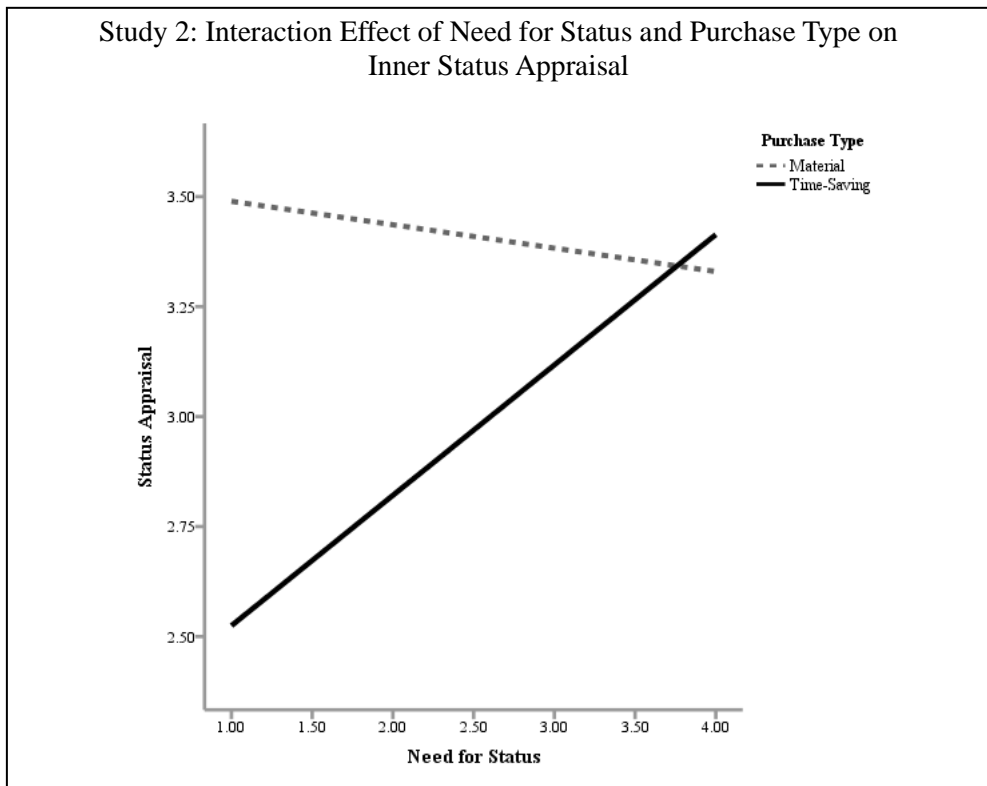


Note. Multiple-step mediation analysis with 5,000 bootstrap samples (model 7 in PROCESS; Hayes 2018). Coefficients significantly different from zero are indicated by asterisks (* $p < .05$; ** $p < .01$; *** $p < .001$).

$$\hat{M} = 4.10 - 1.31X - .40W + .35XW - .02age + .22income$$

$$\hat{Y} = 3.58 - .05X + .12M - .02age - .007income$$

Figure 8



Note. When making a time-saving purchase, participants with a relatively low NFS (vs. high NFS) experienced a significantly lower inner status appraisal, thereby leading to decreased positive affect. Although the significant results were found only in the group of participants holding a relatively low NFS, the direction of the general idea proposed in H1 prevailed.

Altogether, this reverse but significant outcome appeared to be very interesting. Wondering what might have caused such change in the outcome, I decided to proceed with an additional analysis (Study 3) by putting service provider type (AI vs. Human being) as a new possible moderator.¹³

¹³ Refer back to Figure 1.

3.4 Study 3

With the aim to look into the effect of a new moderator, AI, an additional study was conducted.

Method¹⁴

Participants and design. 104 participants recruited through Prolific Academic (76% women; $M_{age} = 33$, range = 18-64) took part in an online questionnaire with a compensation of £6.45/hr. Having passed the two attention checks in between the survey, every single one of the participants was qualified. The current study carries out one-factor (time-saving purchase: yes vs. no) between-subjects design as well as 2 (time-saving purchase: yes vs. no) by 2 (service provider type: AI vs. human being) design.

Procedure. *Time-saving Manipulation.* First, participants were randomly assigned to one of the two conditions: low time-saving and high time-saving. Those in the low time-saving condition were instructed, “Imagine you are a full-time worker. You have a very tight schedule all week. As a result, you find yourself making a time-saving purchase that would allow you a great amount of time throughout your busy daily life.” Those in the high time-saving condition were instructed, “Imagine you are a full-time worker. You have a very tight schedule all week. As a result, you find yourself making a time-saving purchase that would at least allow you a small amount of time throughout your busy daily life.”

Moderator. Then, participants were randomly assigned to one of the two service provider conditions: AI and human being (non-AI). Those in the AI

¹⁴ All other measures and procedures remained the same as in the previous studies.

condition were given the scenario, “This corner-sensitive cleaning robot will take care of your chores on your behalf, including vacuuming carpets and rugs, sweeping and mopping hard floors, etc. (See Figure 2; same as in Study 1).” Those in the non-AI condition were given the scenario, “You have decided to hire a cleaning service for your house. The housekeeper will take care of some household chores on your behalf, including vacuuming carpets and rugs, sweeping and mopping hard floors, etc. (See Figure 9).”

Figure 9



Residential Household Maintenance, Duo Eco, 2018

Results and Discussion

Manipulation Check. A one-way ANOVA on the perceived level of time-saving confirmed that participants in the high time-saving condition ($M = 5.53$; $SD = 1.4$) perceived the experience as more time-saving than participants in the low timesaving condition ($M = 3.35$; $SD = 1.64$; $F(1,102) = 53.42$, $p < .001$).

Table 1

Study 3: Descriptive Statistics for Manipulation (ANOVA)

| Level of Time-Saving | Service Provider Type | N | Mean | Std. Deviation | df | F | p-value |
|----------------------|-----------------------|----|------|----------------|-------------------------------|--------|---------|
| High | AI | 27 | 5.53 | 1.395 | Between 1 Within 102 | 53.417 | .000 |
| | Human | 26 | | | | | |
| | Total | 53 | | | | | |
| Low | AI | 23 | 3.35 | 1.635 | | | |
| | Human | 28 | | | | | |
| | Total | 51 | | | | | |

Perceived Inner Status. A one-way ANOVA confirmed that participants in the high time-saving condition experienced higher inner status appraisal ($M = 5.41$, $SD = 1.24$) than participants in the low time-saving condition ($M = 4.22$, $SD = 1.03$), $F(1,102) = 28.3$, $p < .001$.

Interaction Effect. Univariate analysis revealed that there was a significant difference between low time-saving condition and high time-saving condition ($p < .001$). The two-way ANOVA on inner status appraisal indicated a significant interaction effect of time-saving and service provider type, $F(1,100) = 44.646$, $p < .001$, $n_2 = .309$; see Table 2. Moderately significant interaction effect of time-saving and service provider type on affect balance was also found, $F(1,100) = 2.12$, $p = .149$, $n_2 = .021$; see Table 3.

Table 2

Effect of Time-saving and Service Provider Type on Inner Status Appraisal
(ANOVA)

| | Type III Sum of Squares | df | Mean Square | F | p-value | Partial Eta Squared |
|---|-------------------------------|-----|----------------|--------|---------|---------------------------|
| Time-Saving | 39.474 | 1 | 39.474 | 43.028 | .000 | .301 |
| Service Provider Type | .389 | 1 | .389 | .424 | .516 | .004 |
| Time-saving × Service Provider Type | 40.959 | 1 | 40.959 | 44.646 | .000 | .309 |
| Error | 91.74 | 100 | .917 | | | |
| Total | 2592.822 | 104 | | | | |

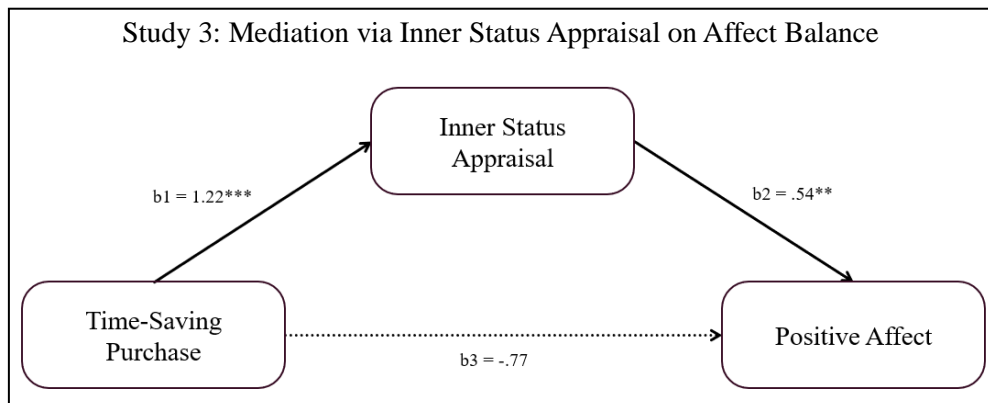
Table 3

Effect of Time-saving and Service Provider Type on Affect Balance (ANOVA)

| | Type III Sum of Squares | df | Mean Square | F | p-value | Partial Eta Squared |
|---|-------------------------------|-----|----------------|-------|---------|---------------------------|
| Time-Saving | .992 | 1 | .992 | .284 | .595 | .003 |
| Service Provider Type | 12.858 | 1 | 12.858 | 3.678 | .058 | .035 |
| Time-saving × Service Provider Type | 7.398 | 1 | 7.398 | 2.116 | .149 | .021 |
| Error | 349.557 | 100 | 3.496 | | | |
| Total | 627.611 | 104 | | | | |

Mediation Analysis. As a result of conducting a bootstrapping analysis using Model 4 from PROCESS (Hayes, 2018), the proposed mediation was found. The perceived inner status completely mediated the effect of time-saving on affect balance (Indirect effect = .65, $SE = .25$, 95% CI [.209, 1.181]). Saving and earning time to a great extent (vs. low time-saving) increased the perceived inner status of oneself, ultimately leading to greater affect balance. It has also been found that age ($b = -.24$, $t(100) = -2.56$, $p = .012$) and income ($b = .16$, $t(100) = 4.38$, $p < .001$) were significantly associated with greater inner status appraisal. Accordingly, participants' age and total annual income were controlled. The results are shown in Figure 10.

Figure 10



Note. Multiple-step mediation analysis with 5,000 bootstrap samples (model 4 in PROCESS; Hayes 2018). Coefficients significantly different from zero are indicated by asterisks (* $p < .05$; ** $p < .01$; *** $p < .001$).

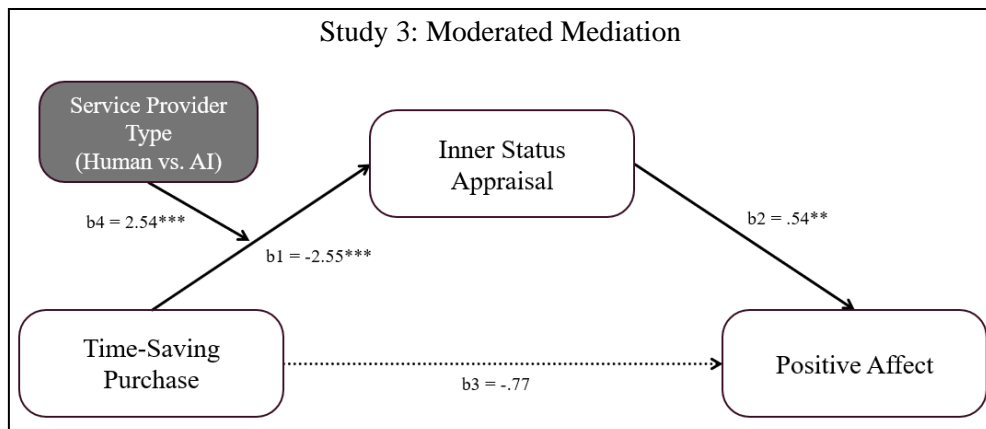
$$\hat{M} = 3.16 + 1.22X - .24age + .16income$$

$$\hat{Y} = -.21 - .77X + .54M - .009age + .09income$$

Moderated Mediation Analysis. Lastly, moderated mediation analysis was conducted to investigate whether inner status appraisal can explain the contradicting effect of time-saving on one's positive affect, depending on the types of medium that provides time-saving services.

Model 7 in Hayes (2018) was employed using 5,000 bootstrap samples with time-saving as an independent variable (X : 1 = low time-saving, 2 = high time-saving), service provider type as a moderator (W : 1 = human being, 2 = AI), affect balance as a dependent variable (Y), and inner status appraisal as a mediator (M). Significantly associated with greater inner status appraisal, participants' age ($b = -.23$, $t(98) = -3.14$, $p = .002$) and total annual income ($b = .16$, $t(98) = 5.63$, $p < .001$) were controlled. As a result, a full moderated mediation was found (Indirect = 1.37, $SE = .46$, 95% CI[.474, 2.297]; see Figure 11 and 12). When making a time-saving purchase of an AI form (vs. non-AI), one experiences higher inner status appraisal, leading to significantly greater affect balance. Therefore, the results of this study lead to the conclusion that a time-saving service provider type of AI, compared to that of a human being, promotes greater positive affect.

Figure 11

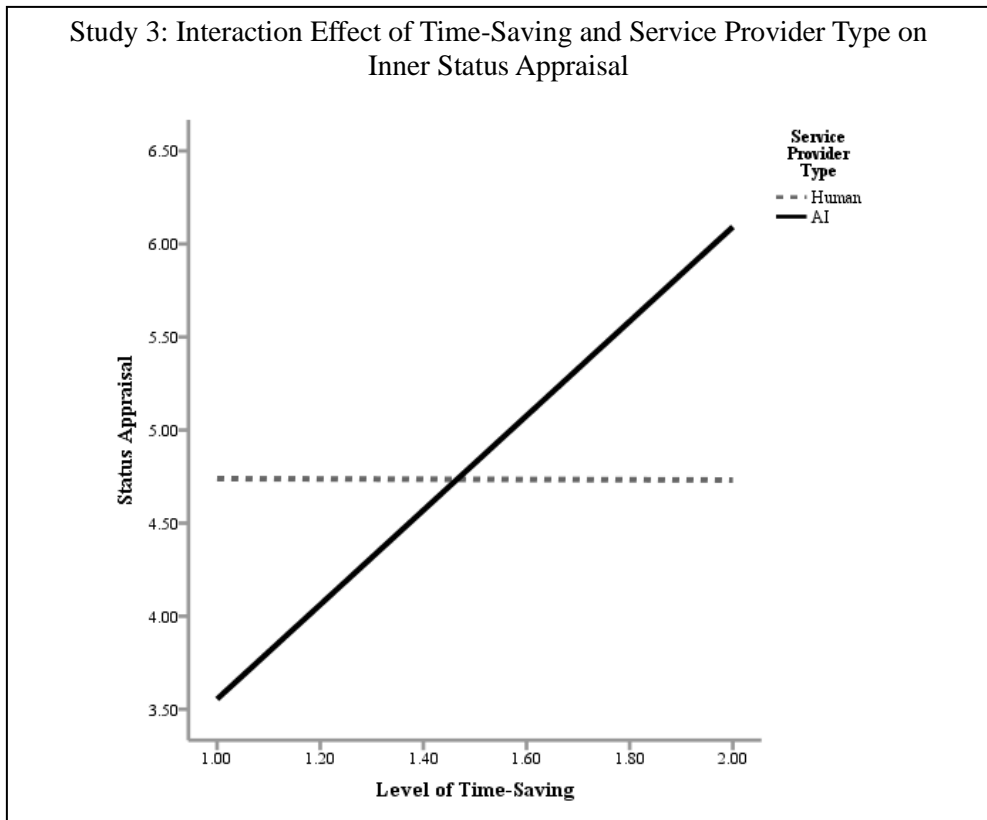


Note. Multiple-step mediation analysis with 5,000 bootstrap samples (model 7 in PROCESS; Hayes 2018). Coefficients significantly different from zero are indicated by asterisks (* $p < .05$; ** $p < .01$; *** $p < .001$).

$$\hat{M} = 8.60 - 2.55X - 3.73W + 2.54XW - .23age + .16income$$

$$\hat{Y} = -.21 - .77X + .54M - .009age + .09income$$

Figure 12



Note. Time-saving service provided in a form of AI (vs. human-being) led to significantly higher inner status appraisal, ultimately leading to greater positive affect.

4. General Discussion

Time-saving purchases can be defined broadly as “any way in which consumers could spend money that would allow more free time” (Whillans et al. 2017). It is shown that trading money for time would bring noticeable benefits for one’s well-being, allowing one to come across greater happiness. Countless research regarding the debates on time and happiness already exist. However, to the best of my knowledge, no research has yet examined the personal level of NFS as a boundary condition of time-saving effects on happiness. Besides, in the domain of purchasing time, this study is the first to empirically test perceived inner status as an underlying mechanism. Last but not least, the effect of service provider type (AI vs. human being) was brought to light along with its interaction with time-saving purchase on positive affect, mediated through an inner status appraisal.

Together, the current article suggests that making a time-saving purchase leads to significantly altered affect balance through the mechanism of inner status appraisal. Through a number of studies, this pattern of results appeared to be reinforced among the ones who possess a relatively high NFS and when the time-saving service is provided in a form of AI. Contributing to the symbolic value of time-saving offerings (Keinan et al. 2019), this research provides meaningful insight into how having control over time to some extent could shape the way in which one perceives his or her own status. Apart from the downside of having a busy lifestyle, this research expands the effect of making time-saving purchases on individuals’ happiness.

As for managerial implications, marketing managers could target consumers with a high NFS by conveying messages that work with the fulfillment

of their need for status. Offering time-saving services in a way that does not imply laying a heavy burden on other people may also be crucial. Along with positive aspects time-saving offerings hold, it is important to avoid passing on a message regarding guilt that may be implicitly associated with products or services. Positioning them as helpful yet comfortable, both physically and mentally, would be necessary. Lastly, individual differences – including openness to innovativeness as well as high technology – certainly cannot be ignored and should be taken into consideration when calling attention to time-saving (i.e., busyness-signaling) products or services.

Limitations and Future Research

The current research holds several limitations. First, our sample consisted of participants of all types of employment status: employed full-time, employed part-time, self-employed, unemployed, homemakers, students, retired, or people who are unable to work. Since time-saving services are more likely to be purchased by time-buying consumers who are constantly occupied with daily tasks, exclusive gathering of a sample of full-time working adults may have triggered a more prominent and reliable effect of time-saving. Second, time-saving manipulation in Study 1 somewhat explicitly highlighted the time-saving benefits the cleaning robot provides. Just by the fact that cleaning robots convey cutting edge aspects of AI, it may have appeared as if the time-saving effect was revealed. On that account, however, Study 2 was carried out involving a different time-saving manipulation scenario of self-cleaning versus hiring a household assistant, ruling out the alternative explanation of confounding AI effects. Additionally, rather than simply asking the participants of their total annual income, future research could further

investigate their subjective versus objective financial status. Regardless of how much they make for a living, some people may be subjectively more affluent in real-time. Whether or not a person is pressed for money subjectively, rather than objectively, may be another facet to inquire into.

With the topic of Artificial Intelligence on the rise, AI has incrementally been transforming and taking over the world. Future research could explore other positive aspects of AI that may be intriguing the modern consumers, ultimately affecting their level of happiness. Aside from time-saving services related to cleaning and household maintenance, many other features of AI time-saving services could touch on different consumer domains (e.g., e-commerce, social media) that would allow further managerial implications to the fast-growing market in the present time. This could possibly be extended into the realm of online business-to-business (B2B) marketplaces as well. Furthermore, uncovering other underlying mechanisms in the relationship between time-saving purchase and positive affect continue to remain as a possibility for future research.

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국문초록

시간확보를 위한 구매행동이 소비자감정에 미치는 영향:

지위욕구와 인공지능의 조절효과

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시간확보에 대한 기존 연구는 시간 절약 서비스가 개인의 행복과 스트레스 완화에 미치는 이점에 중점을 두었다. 그러나 시간확보를 위한 구매행동의 잠재된 부정적 측면 뿐만 아니라 새로운 기저 메커니즘(underlying mechanism)에 대한 연구는 다뤄진 적이 거의 전무하다. 그 점을 메우기 위해 본 연구는 소비자의 지위욕구 및 인공지능의 조절효과(moderating effect)와 더불어 내부 지위 평가(inner status appraisal)의 매개효과(mediating effect)를 조사·분석하였다.

본 연구에서는 보통 다른 사람으로부터 받게 되는 평가에 대한 초점이 본인 자신에게 이동됨으로써 지위(status)라는 단어가 비전통적인 관점에서 정의되고 묘사되었다. 실험 1에 의하면 시간확보를 위한 구매를 하면 본인에게 인식되는 내부 지위 상태가 높아져 행복도가 올라간다. 그러나 실험 2에 의하면 시간확보를 위한 구매는 결국 본인에게 인지되는 지위 상태를 낮추어 행복도를 감소시킴을 암시하는 반대 패턴을 보여

주었다. 이와 같은 실험 1과 실험 2의 상반된 결과에 기초하여 추가적인 분석으로 실험 3이 진행되었다. 특히, 실험 3은 시간확보를 위한 구매 행동이 소비자감정에 미치는 효과에 영향을 주는 인공지능 혹은 인간과 같이 서로 다른 서비스 제공 유형의 조절변수역할(moderating role)을 조사·분석하였다. 종합적으로, 특정 서비스 제공 유형의 시간 확보를 위한 구매가 진행될 때 본인 스스로 인식되는 내부 지위 상태가 변경되고, 이에 따라 소비자 행복도에 직·간접적인 영향을 미친다는 결과가 나타났다. 따라서 본 연구는 시간 절약형 구매로 인한 긍정적인 영향의 새로운 경계 조건(boundary conditions)을 분석함으로써 시간확보와 소비자 구매 행동 및 감정에 대한 기존연구에 새로운 시사점을 제공하고 있다.

주요어: 시간확보 구매행동, 소비자 감정, 내부 지위 평가, 지위욕구,
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