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When My Object Becomes Me: The Mere Ownership of an Object Elevates Domain-Specific Self-Efficacy

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When my object becomes me:

The mere ownership of an object elevates domain-specific perceived self-efficacy

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Abstract

Past research on the mere ownership effect has shown that when people own an object, they perceive the owned objects more favorably than the comparable non-owned objects. The present research extends this idea showing that when people own an object functional to the self, they perceive an increase in their self-efficacy. Three studies were conducted to demonstrate this new form of the mere ownership effect. In Study 1, participants reported an increase in their knowledge level by the mere ownership of reading materials (a reading package in Study 1a, and lecture notes in Study 1b). In Study 2, participants reported an increase in their resilience to sleepiness by merely owning a piece of chocolate that purportedly had sleepiness-combating function. In Study 3, participants who merely owned a flower essence that is claimed to boost creativity reported having higher creativity efficacy. The findings provided insights on how associations with objects alter one's self-perception.

Key words: mere ownership, perception, self-enhancement, self-efficacy

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Introduction

The mere ownership effect refers to the individuals' tendency to evaluate their owned objects more favorably than the comparable non-owned objects (Beggan 1992). There are numerous behavioral and neuroimaging demonstrations of the mere ownership effect, and self-enhancement motive is suggested to be the mechanism underlying such self-positivity bias. However, these prior studies mainly focused on how the owned object is incorporated into one's self-identity and the consequence of such incorporation on people's evaluation of the *object*. So far, no studies have investigated directly the consequence of such incorporation on people's evaluation of the *self*. Could merely owning an object alter one's belief in their self-ability or efficacy? In this paper, we attempt to extend the consequential scope of the mere ownership effect. We hypothesize that if self-enhancement motive is the underlying mechanism of the mere ownership effect, people who own an object that is functional to the self (e.g., a book that has a function to improve one's knowledge) would incorporate the functional property of the object into their self-concept, and thus perceive a positive change in their self-efficacy (e.g., perceiving the self becomes more knowledgeable). We report three empirical studies that demonstrated this consquential aspect of the mere ownership effect.

Incorporating the object into one's self-identity

Ownership, the classification of object as belonging to the self, helps us to develop and maintain a sense of self (James, 1890/1983, 1929). The social-identity theory (Tajfel & Turner, 1986) and the symbolic self-completion theory (Wicklund & Gollwitzer, 1981) consistently suggested that our possession defines who we are. Anthropological studies (Beaglehole, 1932) and sociological research (Niederland & Sholevar, 1981; Bloch, 1982; Grubb & Hupp, 1968; Jacobson & Kossoff, 1963) also documented that people tend to incorporate their possession into their self-

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concept. Consistently, research on possession and self-perception (Prelinger,1959; Belk, 1988) reported that people tend to incorporate objects into their self-identity.

The mere ownership effect and self-enhancement motive

In the classical mere ownership study (Beggan, 1992), participants' attitude towards the object was affected by ownership. Those who owned the object reported that they like the object better than those who did not own the object. A number of psychological studies had provided support for the mere ownership effect. Prior research showed that participants evaluated their owned object to be more attractive (Feys, 1991; Heider, 1958; Huang, Wang & Shi, 2009; Reb & Connolly, 2007; Thaler, 1980) and valuable (Kahneman, Knetsch, & Thaler, 1990), to contain more positive characteristics (Nesselroade et al., 1999), and to share human personality traits as themselves (Greenwald, Banaji, Rudman, Farnham, Nosek, & Mellott, 2002; Kiesler & Kiesler, 2005; Epley, Waytz, & Cacioppo, 2007) compared to people who lack ownership (Belk, 1988; Dittmar, 1992; Prelinger, 1959), or compared to objects owned by others (Nesselroade et al., 1999). Beggan (1992) argued that the mere ownership effect was not due to participants having greater exposure to the owned object, or experiencing a positive mood from obtaining the object. The effect happened when participants' self image was threatened (see De Dreu & Knippenberg, 2005). Beggan (1992) proposed that the mere ownership effect is a result of people's desire to maintain a positive self-image.

Recently, evidence support for the motivational account of the mere ownership effect comes from neuroimaging studies. Basically these studies used fMRI to measure participants' brain activity before and after they obtained the ownerships of objects. Results generally demonstrated that the mere ownership effect was associated with strong activation of the neural systems responsible for self-referential processing, indicating that participants viewed the owned object as

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an extension of the self. For example, in Kim and Johnson's (2012) study, participants who showed an increased post-preference for the assigned objects (i.e., mere ownership effect) also showed a greater activation of the brain structures that are involved in self-referencing process. This finding provides neural evidence that people incorporated the owned objects into their self-concept. In another study, Kim and Johnson (2014) found that the amount of post-preference increase for the self-owned object was positively correlated with the amount of post-preference decrease for the other-owned objects. This result reflects participants' desire to self-enhance being extended to overvaluing the self-owned objects and relatively devaluating the other-owned object. The finding supports the proposition that self-enhancement motive is an underlying mechanism for the mere ownership effect.

To provide more concrete evidence support for the motivational account of the mere ownership effect, Kim and Johnson (2015a) scanned participants' brain activities while they made evaluation of the owned object in two different motivational contexts – the presence vs. absence of a threat to one's self esteem. Echoing the findings of the previous studies (Kim & Johnson, 2012, 2014), when participants' self-esteem was not threatened, the brain regions responsible for the self-referencing processing were activated, indicating the inclusion of the owned object into the self-concept (implicit forms of self-enhancement). However, when participants' self-esteem was threatened, the brain regions responsible for higher order inhibitory (e.g., suppressing the processing of negative attributes of one's owned object) and selective cognitive mechanisms (e.g., selectively processing of positive attributes to maintain the self-protection motivation in mind) were activated, indicating the maintenance of positive self-esteem (deliberate forms of self-enhancement). This study supports the mere ownership effect is due to the need to feel good about oneself or the need to restore the threatened self-esteem.

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Incorporating the functional property of the object into the self, elevating one's self-efficacy

Results of the above psychological and neuroimaging studies suggest that the mere ownership effect is motivational in nature: people satisfy their self-enhancing desire by extending the positive attributes of the self to their owned objects (self →object), consequently evaluating their owned object positively. If self-enhancement motive is the underlying mechanism of the mere ownership effect, a reverse direction is also possible: people satisfy their self-enhancing desire by incorporating the functional property of the owned object into the self (object → self), consequently enhancing their self-efficacy.

Although this consequential aspect of the mere ownership effect has not been previously examined, some past research has proposed its possibility. For example, researchers (Turk et al., 2011; Liu et al., 2007) reported that self ownership increased activity in brain regions responsible for signaling positive reward, implying that individuals expect to obtain positive reward from their owned object (object → self). Also, Kim and Johnson (2015b) found that participants were more likely to incorporate the objects into their self-concept when the object has personal significance to the self or is functional to the self.

In consumer self-concept research, consumers tend to choose certain brands in order to connect the self with the symbolic meaning associated with the brands. The aim is to assert or express one's self-identity (Belk, 1988; Ball & Tasaki, 1992; Escalas & Bettman, 2005; Gao, Wheeler, & Shiv, 2009). Our current proposition differs from this past research in at least two ways. First, while past research emphasizes the *assertion* of one's self-*identity* (e.g., I *am* an intellectual) constructed by the ownership of a brand, our proposition emphasizes the *change* in one's self-*ability* (e.g., I am *becoming* more intelligent) endorsed by the ownership of a functional object. Second, while the past "brand meaning – self identity" connection involves active choice by

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consumers, our "functional object – self efficacy" connection could happen under a no-choice condition (e.g., object being assigned by the experimenter), because a no-choice condition is sufficient to successfully connect the object to the self (Gawronski, Bodenhausen, & Becker, 2007).

The Present Studies

Three studies were conducted. Study 1 examined whether university students would perceive themselves becoming more knowledgeable by merely owning some reading materials. Study 2 tested whether people would see themselves as more resilient to sleepiness by merely owning a piece of sleepiness-combating chocolate. Study 3 examined whether people would perceive themselves to be more creative by merely owning a bottle of "creativity boosting" flower essence.

Study 1

Two quasi-experiments were conducted using a reading package (Study 1a) and lecture notes (Study 1b). Following the past studies (Kim & Johnson, 2012, 2014, 2015ab), within-subjects pre- and post-test design was used to compare the degree of perceived knowledge change. Also, following the past studies (Hoeppner et al., 2011; Hyland & Whalley, 2008; Watson & Winkelman, 2005), a single-item was used to measure the perceived change in the self (see Bergkvist & Rossiter, 2007, 2009; Gardner et al., 1989; Hoeppner et al., 2011).

Study 1a

Participants. Fifty-nine Hong Kong university students (45 females, M_{age}=20.79, *SD*=1.25) from an introductory psychology course participated in the study. They attended one of the four identical tutorial classes run by the same instructor. There was no systematic factor that determined which tutorial classes the students ended up in, so the assignment could be seen as random. Both the

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instructor and the students were blind to the hypothesis. Thirty-one participants were in the without-ownership condition and twenty-eight participants were in the with-ownership condition.

Procedure. In the first tutorial class, participants were informed that one course requirement was to give a presentation on a particular topic, which was decided by a random draw. They were asked to introduce themselves and express their view on the course, such as "*What are the reasons you chose the course?*". Among these distractor questions, they were asked to write down the title of their assigned topic, assess their knowledge on the topic: "*At this moment, how well do you know about the assigned presentation topic?*" (pre-knowledge rating, 1=*not at all*, 7=*very well*), and indicate their past experience: "*Have you ever taken any course related to your presentation topic before?*".

Participants in the with-ownership condition were given a reading package relevant to their assigned topic. They were instructed to write down their name and university ID on the blank cover page of the package. This was to establish their sense of ownership over the reading package. They were instructed not to open the package but to place it under the desks, because they needed to attend to an important talk first. This created a mere ownership situation without actual consumption. Participants in the without-ownership condition (who attended the identical tutorial class in another timeslot) were not given any reading package. Participants in both conditions then received a set of administrative handouts and listened to a 10-minute introduction on the university and tutorial administrative policy. This 10-minute talk served as a distractor task and contained no information relevant to their presentation topic. After that, the participants were asked to give feedback on the content of the talk. Among the distractor questions (e.g., "*What is your view on the tutorial activity arrangement and the assessment criteria?*"), they were asked to assess their knowledge on the assigned presentation topic (post-knowledge rating).

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In order to examine whether owning the reading materials could affect participants' actual knowledge gained, an unexpected quiz was conducted. Participants were asked to answer ten questions related to their presentation topic, and their quiz scores were calculated (maximum of ten points). A manipulation check was conducted to see if participants could identify their ownership status: "*At this moment, have you received any reading materials that are related to your presentation topic from the teacher?*". At the end, participants were asked to guess the hypothesis. None of them were correct. They were fully debriefed.

Results

Five participants failed to correctly identify their ownership status, and their data were excluded, leaving 27 participants (21 females, M_{age}=20.85, *SD*=.95) in the with-ownership condition and 27 participants (20 females, M_{age}=20.78, *SD*=1.58) in the without-ownership condition for data analysis. None of the participants in the with-ownership condition had opened and read the reading package during the experiment. We had no *a priori* effect size expectations. A sensitivity power analysis (Faul et al., 2007) showed that 27 participants per condition assuming power=.80 and α=.05, allowed for detecting effects of η_p^2>.11 for the ownership between-effect, η_p^2>.03 for the knowledge rating within-effect, and η_p^2>.03 for the interaction effect. These calculations were based on correlation of the repeated measures of *r*=.66 across participants.

A 2 (knowledge rating: pre-knowledge vs. post-knowledge) x 2 (ownership: with vs. without) mixed ANOVA was conducted to test whether participants felt more knowledgeable after merely owned the reading package. The main effect of knowledge rating, $F(1,52)=19.87$, $p<.001$, $\eta_p^2=.28$), and the main effect of ownership, $F(1,52)=3.91$, $p=.05$, $\eta_p^2=.07$) were significant. These main effects were qualified by a significant interaction effect of knowledge rating and

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ownership, $F(1,52)=6.13$, $p=.02$, $\eta_p^2=.11$, $CI_{95\%}=[0.01, 0.24]$, observed power=.68. Participants in the with-ownership condition reported a significant increase in their post-knowledge rating ($M=3.67$, $SD=.88$) compared to their pre-knowledge rating ($M=2.89$, $SD=1.09$), $t(26)=-3.99$, $p<.001$, $d=.77$, $CI_{95\%}= [.33, 1.19]$. However, this did not happen in the without-ownership condition ($M_{pre\text{-}knowledge}=2.67$, $SD=1.11$; $M_{post\text{-}knowledge}=2.89$, $SD=.97$; $t(26)=-2.00$, $p=.06$, $d=.38$, $CI_{95\%}=[-0.01, 0.77]$) (see Figure 1). Participants across the two conditions did not differ in their initial knowledge rating, $t(52)=-.74$, $p=.46$, $d=.20$, $CI_{95\%}=[-0.33, 0.74]$, but once participants merely owned the reading package, they reported a significantly higher post-knowledge rating than their counterparts who did not own the package, $t(52)=-3.08$, $p=.003$, $d=.84$, $CI_{95\%}=[0.28, 1.39]$.

In order to investigate the robustness of the effects, the number and percentage of participants whose ratings increased (or decreased) between pre- and post-tests were calculated and are presented in Table 1. Results showed that our findings were not driven by a small subset of participants: While there were a few participants (7.4%) who reported a knowledge decrease (post < pre) in both conditions, the majority of participants (63%) in the without-ownership condition reported no knowledge change (pre=post); conversely, the majority of participants (55.6%) in the with-ownership conditions reported a knowledge increase (post > pre) (see Table 1).

In order to rule out an alternative explanation that participants reported an increase in their post-knowledge rating due to their previous experience on the presentation topic, an ANCOVA was conducted controlling for the variable "past experience". The results remained unchanged, $F(1,51)=6.04$, $p=.02$, $\eta_p^2=.11$, $CI_{95\%}=[0.01, 0.24]$, observed power=.67.

Finally, although participants in the with-ownership condition *perceived* that they were more knowledgeable, they did not show superior performance in the unexpected quiz (score: $M=4.44$, $SD=1.58$) compared to their counterparts in the without-ownership condition (score:

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M=4.37, *SD*=1.47), *t*(52)=-.18, *p*=.86, *d*=.05, $CI_{95\%}$=[-0.48, 0.58]. This implies that the perceived knowledge gain in the with-ownership condition was a psychological illusion.

Discussion

Study 1a showed that participants perceived the self to become more knowledgeable upon the mere ownership of the reading package. One might argue that since participants in the without-ownership condition did not possess anything while participants in the with-ownership condition did possess the reading materials, the results may be reducible to a demand effect: Simply receiving materials from a teacher led participants to feel special and thus report being more knowledgeable. However, this confound was actually controlled for – participants in the without-ownership condition were also given something, i.e., the administrative handouts. Our results revealed that even though participants in the without-ownership condition owned the administrative handout, and might have experienced a positive feeling of being treated as special, they did not show an increase in their perceived knowledge.

It is important to replicate the finding by using an alternative dependent variable that reflects the perception of knowledge gain. In Study 1b, participants' perceived efficacy of obtaining a higher score on a quiz was examined.

Study 1b

Participants. Ninety-five Hong Kong university students (74 females, M_{age}=19.20, *SD*=1.80) who attended one of the two identical lectures of a psychology course participated in the study to fulfill course requirements. Fifty-four participants were in the without-ownership condition, and forty-one participants were in the with-ownership condition. All participants were blind to the hypothesis.

Procedure. In the first lecture, students were told a cover story that in order for the lecturer to design the lecture content that best fit their learning objective, they were asked to complete a

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questionnaire assessing their existing views on the course. Among the distractor items (e.g., "*At this moment, how well do you know about the objectives of this course?*", 1=*not at all*, 7=*very well*), participants were asked to estimate their score if they were given a short quiz: "*if you were to take a short quiz next week on the content of today's lecture topic, what score do you think you will get in the quiz, out of a full score of 100? Please write down your expected score between 0 and 100*" (pre-score).

Participants in the with-ownership condition were given the administrative notes and lecture notes (a 4-page unattractive handout with mainly black and white pictures printed in PowerPoint slide format which gave less information than the lecture content presented by the lecturer). They were told that the same lecture notes could also be downloaded online after the lecture. They were asked to clear their desks, such as putting their cell phones and notes inside their bags so as to pay full attention to the lecture. This was to create a mere ownership situation without actual consumption of the notes. After making sure all participants cleared away their belongings, the lecturer gave a two-hour lecture. After the lecture, participants were asked to give feedback concerning the lecture. Among the distractor items (e.g., "*At this moment, how well do you understand the content of today's lecture*?", 1=*not at all*, 7=*very well*), they were asked to estimate their quiz score again (post-score). Manipulation checks were conducted in both the pre- and post-periods to check if participants could identify their ownership status correctly ("*Have you received any administrative handout from the teacher?*", "*Have you received any lecture notes from the teacher?*"). In the without-ownership condition, participants (who attended the identical lecture at another time slot) received the same cover story, obtained the same administrative handouts, and learned that the notes could be downloaded online to enable them to prepare for the test. The only difference was that they did not physically own the notes when estimating their quiz performance.

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Results

Forty-four participants failed to pass the manipulation checks. The manipulation checks were collected at two different time points (before and after the lecture). It is important that students in both conditions realized and perceived that they own nothing when making the pre-score estimation. They were asked if they had received any administrative handouts and lecture notes, the valid and correct answer was 'no' (because these materials were delivered during the lecture). However, for students who came late to the class, the lecture had already started and thus the materials were already placed on their desk, leading them to answer 'yes' in the pre-test manipulation check. Their perception of owning the materials might bias their pre-score estimation; as such their data were removed (n=14 in with-ownership condition; n=30 in without-ownership condition). Only 27 participants (22 females, M_{age}=20.81, *SD*=.96) in the with-ownership condition and 24 participants (20 females, M_{age}=17.92, *SD*=.50) in the without-ownership condition were included in the analysis. A sensitivity power analysis showed that with 51 participants assuming power=.80 and α=.05, it allowed for detecting effects of η_p^2>.12 for the ownership between-effect, η_p^2>.02 for the quiz score within-effect, and η_p^2>.02 for the interaction effect. These calculations were based on an average correlation of the repeated measures of *r*=.75 across the participants.

A 2 (ownership: with vs. without) x 2 (expected quiz score: pre-score vs. post-score) mixed ANOVA was conducted. The main effect of expected quiz score was significant, $F(1,42)=15.01$, $p<.001$, $\eta_p^2=.26$. The main effect of ownership was not significant, $F(1,42)=1.16$, $p=.29$, $\eta_p^2=.03$. The interaction effect of expected quiz score and ownership was significant, $F(1,42)$[1]$=6.79$, $p=.01$,

[1] The degree of freedom is 42 instead of 49 because 3 participants in the without-ownership condition, and 4 participants in the with-ownership condition provided missing data in either the pre-score rating or the post-score rating.

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η_p^2=.14, $CI_{95\%}$=[0.02, 0.30], observed power=.72. As expected, participants in the without-ownership condition did not differ in their pre-score (*M* =57, *SD*=22.62) and post-score (*M*=59.81, *SD*=19.70), *t*(20)=-1.21, *p*=.24. *b*=.26, $CI_{95\%}$=[-0.17, 0.70]. However, participants in the with-ownership condition reported a significant increase from their pre-score (*M*=57.83, *SD*=24.99) to post-score (*M*=72.17, *SD*=18.21), *t*(22)=-3.92, *p*=.001, *b*=.82, $CI_{95\%}$=[0.34, 1.28] (see Figure 2). Participants in both conditions did not differ in their initial score, *t*(42)=-.12, *p*=.91, *b*=.04, $CI_{95\%}$=[-0.56, 0.63], but once participants owned the lecture notes, they expected a higher quiz score compared to participants who did not own the notes, *t*(42)=-2.16, *p*=.04, *b*=.66, $CI_{95\%}$=[0.04, 1.26]. The expected score gain (12 points gain) on the mere ownership of lecture notes reflected participants believed that they have higher efficacy to tackle the quiz.

Table 2 shows that our findings were not driven by a small subset of participants: Participants who did not own the lecture notes showed a similar tendency across the three expectation possibilities (score increased, decreased, and no change), but participants who owned the lecture notes, the majority of them (63%) tended to expect a score increase (post > pre).

Discussion

While Study 1a showed that the mere ownership of learning materials has no direct effect on the *actual* knowledge gained, Study 1b revealed that it did enhance participants' perceived efficacy of obtaining a higher quiz score. This is interesting given that participants in both conditions realized that they were able to access the relevant materials after class to prepare for the test; the only difference was whether they physically owned the notes at the time of making the estimation. Results showed that once participants physically owned the notes, even though they had not used the notes, they believed they could obtain a higher score.

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There could have three alternative explanations for the observed effect. First, the results could have been due to a priming effect (cf. Fitzsimons et al., 2008) rather than mere ownership. The presence of the learning materials in the with-ownership condition might have primed the participants to feel more knowledgeable. Indeed, past research has shown that people can benefit from the mere access to an object (e.g., Corah, 1973; Damisch et al., 2010). In our study, the availability and accessibility of the learning materials might have made participants feel having more in control (e.g., I can read the materials anytime when I need) or happier (e.g., I feel happier because I secured these useful materials, see Isen et al., 1978), thus leading to an illusion of knowledge or quiz score increase. To eliminate these alternative explanations, in Study 2 the object was made visually available to all participants. Participants in both conditions were equally exposed to (and primed by) the object and had a similar level of current control over the object. We also measured participants' mood.

The second alternative explanation was that participants in the with-ownership condition had a chance to *touch* the lecture notes while participants in the without-ownership condition did not. Past research on magical contagion (Nemeroff & Rozin, 1989, 1994; Rozin, Millman, & Nemeroff, 1986) and the property transmission hypothesis (White, 2009) suggested that when people come to interact with an object, they believe that properties of the object can be transmitted to the self. So our results could be due to the physical contact with the object and not mere ownership. In Study 2, all participants were allowed to touch (but not use) the object; the only difference then was the presence vs. absence of ownership of the object.

The third alternative explanation was that we asked the participants to assess their knowledge or quiz score, and then we gave a relevant object to them; this may potentially create a feeling of obligation to use the object in the future, and thus may have induced a demand effect. In

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Study 2, we adopted Barone, Shimp, and Sprott's (1997) method to unexpectedly deliver the object to the participants. This way we avoided creating a sense of obligation to use the object, and that any effect of owning the object would be spontaneous.

Study 2

In Study 2, the sample was composed of working adults from the general public. A piece of coffee chocolate, which was purported to have the effect of combating sleepiness, was used. In general, working adults would feel sleepy and tired after finishing their full time day job in addition to attending a long, two-hour, evening class. We hypothesize that participants in the without-ownership condition would naturally report feeling more sleepy after the long lecture, but participants who owned the chocolate would perceive the self as more resilient to sleepiness, thus would report a lower level of sleepiness.

Participants. Ninety Hong Kong adults (89 females, 1 unidentified gender, age ranged from 22 to 52, M_{age}=29.25, *SD*=6.11) attended one of the two sessions of an identical evening class participated in the study. Thirty-three participants were in the without-ownership condition, and fifty-seven participants were in the with-ownership condition. Both the experimenter and the participants were blind to the hypothesis.

Procedures. Participants were told to evaluate the evening class they were currently attending and to assess their psychological health as a cover story. In the pre-test, among other distractor items in the ostensible evaluation task (e.g., "*What do you think about the course?*", 1=*very difficult*, 7=*very easy*; "*At this moment, how well do you know about today's lecture topic?*", 1=*not so much*, 7=*very much;* "*At this moment, how good is your memory?"*, 1=*very bad*, 7=*very good*), participants were asked to rate their level of sleepiness (pre-sleepy rating: "*At this moment, how sleepy are you?*", 1=*not at all*; 7=*very sleepy*). In the with-ownership condition, the experimenter (also the course

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lecturer) reported a fictitious research study that a specific brand of coffee chocolate was found to contain an ingredient (caffeine) that could make people feel alert and effectively fight off sleepiness. As part of the lecture demonstration, she showed the participants a box of the branded chocolate. She gave a piece of the chocolate to the participants as a token of appreciation for completing the evaluation task. Each chocolate was individually packed and was placed on participants' desks where the participants could physically touch it. The lecturer reminded the class that due to the policy of "no eating and no drinking" in the classroom, participants were told to abstain from eating the chocolate during the class. After the two-hour lecture, participants were asked to fill in a questionnaire purportedly aiming to evaluate the lecture (e.g., "*At this moment, how much do you understand the content of today's lecture?*", 1=*not so much*, 7=*very much*). The post-sleepy item was embedded alongside the distractor items in the questionnaire. Participants' attitude towards chocolate ("*How much do you like chocolate?*", 1=*not at all*; 7=*very much*), mood status ("*At this moment, how is your mood?*", 1=*very bad*; 7=*very good*), and future use intention ("*In general how likely would you be to eat coffee chocolate in the future?",* 1=*never*; 7=*very likely*) were measured alongside the distractor items.

In the without-ownership condition, participants (who attended the identical lecture in another evening session) underwent the same procedures, except that they did not receive the chocolate as a gift. More specifically, they completed the same course evaluation, and heard the same fictitious study about the chocolate. They were presented with the same piece of chocolate on their desks with an excuse of letting them inspect the brand and packaging of the chocolate, so as to

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minimize the chance of buying a counterfeit version[2]. Like their counterparts in the with-ownership condition, they could touch the chocolate, but they were told that they needed to return the chocolate to the lecturer at the end of the class.

Because the stimuli object was a piece of normal-looking chocolate, a manipulation check was conducted to measure the degree to which participants believed the chocolate has the sleepiness-combating function as claimed (belief: "*How much do you believe coffee chocolate can improve alertness?*", *1=not at all; 7=very much*) [3]. In addition, other manipulation checks were also conducted. Participants were asked to indicate their ownership status ("*At this moment, do you own a piece of coffee chocolate?"*), whether they learned the (fictitious) chocolate study ("*Did the lecturer report the research findings about chocolate during the lecture?*"), and whether they had consumed any caffeine-related food/drink before or during the class (and therefore could legitimately believe they possessed the functional property due to actual consumption). Finally, participants were probed for suspicion and were asked to guess the hypothesis. None of them correctly guessed the hypothesis or showed reasonable suspicion. They were fully debriefed as to the purpose of the study, in particular, about the deception nature of the study.

Results

Participants who came late to the class and thus missed the lecturer's announcement about the ownership of the chocolate (incorrect ownership identification: n=7 in the with-ownership condition; n=12 in the without-ownership condition, 1 missing data) and/or missed the description about the chocolate study (n=8 in the with-ownership condition and n=7 in the without-ownership

[2] Counterfeit products are quite widespread in China and Hong Kong.

[3] The design that asking participants' belief in the alertness property of the chocolate and checking their sleepiness level was less prone to task demands.

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condition, 1 missing data), and/or had recently consumed caffeine-related food/drink (including the given chocolate) (n=8 in the with-ownership condition and n=5 in the without-ownership condition, 1 missing data) were removed[4]. Data of 59 participants were used for data analysis. There were thirty-four participants (33 females, 1 unidentified gender, M_{age}=28.76, ranged from 22 to 49, SD=6.00) in the with-ownership condition and twenty-five participants (25 females, M_{age}=28.86, ranged from 22 to 43, SD=5.91) in the without-ownership condition. We had no *a priori* effect size expectation for this public sample. A sensitivity power analysis revealed that with 59 participants assuming power=.80 and α=.05, it allowed for detecting effects of η_p^2>.11 for the ownership between-effect, η_p^2>.02 for the sleepiness rating within-effect, and η_p^2>.02 for the interaction effect based on an average correlation of repeated measures of r=.74 across participants.

A 2 (sleepiness rating: pre-sleepy vs. post-sleepy) x 2 (ownership: with vs. without) mixed ANOVA was conducted. The main effect of ownership was significant, F(1,57)=4.94, p=.03, η_p^2=.08. The main effect of sleepiness rating was not significant, F(1,57)=.93, p=.34, η_p^2=.02. The interaction effect of sleepiness rating and ownership was significant, F(1,57)=15.37, p<.001, η_p^2=.21, $CI_{95\%}$=[0.07, 0.35], observed power=.97. As expected, after a full working day and a two-hour lecture, participants in the without-ownership condition felt sleepier at the end of the class. They reported a significant increase in their sleepiness rating ($M_{pre\text{-}sleepy}$=4.36, SD =1.68; $M_{post\text{-}sleepy}$=5.04, SD=1.62), t(24)=-3.18, p=.004, d=.64, $CI_{95\%}$=[0.22, 1.06]; but participants in the with-ownership condition showed a significant decrease in their sleepiness rating ($M_{pre\text{-}sleepy}$=4.06, SD=1.39; $M_{post\text{-}sleepy}$=3.65, SD=1.52), t(33)=2.29. p=.03, d=.39, $CI_{95\%}$=[0.04, 0.74]. Participants in both conditions did not differ in their pre-sleepy rating, t(57)=.75, p=.46, d=.20, $CI_{95\%}$=[-0.32,

[4] When the full dataset was used, the results remain unchanged.

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0.71], but once they merely owned the chocolate, they reported a significantly lower post-sleepy level compared to their counterparts who did not own the chocolate, $t(57)=3.39$, $p=.001$, $d=.89$, $CI_{95\%}=[0.35, 1.43]$ (see Figure 3).

Table 3 shows that in the without-ownership condition, about half of the participants (44%) reported no change in their sleepiness level, and the majority (48%) reported an increase in their sleepiness level (post>pre). In contrast, participants in the with-ownership condition showed a higher resilience to sleepiness: more than half of the participants (58.8%) reported no change in their sleepiness level, and about one-third of them (32.4%) even reported a decrease in their sleepiness level (see Table 3).

Further analysis revealed that participants in the with-ownership condition showed a slightly higher preference for the chocolate ($M=6.09$, $SD=.98$) than participants in the without-ownership condition ($M=5.44$, $SD=1.61$), indicating a classic mere ownership effect, $t(37.18)$[5]$=-1.79$, $p=.08$, $d=.47$, $CI_{95\%}=[-0.06, 1.00]$. Also, participants in the with-ownership condition were not significantly happier ($M=4.88$, $SD=.95$) than participants in the without-ownership condition ($M=4.64$, $SD=1.32$), $t(57)=-.82$, $p=.41$, $d=.22$, $CI_{95\%}=[-0.30, 0.73]$. Nevertheless, participants in the with-ownership condition had a higher intention to eat coffee chocolate ($M=4.70$, $SD=1.85$) than participants in the without-ownership condition ($M=3.48$, $SD=1.78$), $t(56)$[6]$=-2.52$, $p=.01$, $d=.67$, $CI_{95\%}=[0.13, 1.20]$. Participants generally believed the claimed function of the chocolate ($M_{\text{with-ownership}}=4.41$, $SD=1.13$; $M_{\text{without-ownership}}=4.24$, $SD=1.59$; $t(57)=-.49$, $p=.63$, $d=.13$, $CI_{95\%}=[-0.39, 0.65]$).

[5] One missing data in the with-ownership condition, Levene's test showed the equality of variance assumption was violated, $F=9.47$, $p=.003$.

[6] One missing data in the with-ownership condition.

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Finally, recall that participants were asked to assess their knowledge on the lecture topic before and after the lecture (which served as distractor items to mask the purpose of the study). In order to check if the observed mere ownership effect is domain specific or not (i.e., whether owing a piece of sleepiness-combating chocolate would only increase participants' sleepiness-combating capacity, but not other ability), a mixed ANOVA was conducted. Results showed that the main effect of knowledge, $F(1,57)=.67$, $p=.41$; the main effect of ownership, $F(1,57)=.30$, $p=.59$; and the interaction effect of knowledge and ownership, $F(1,57)=1.45$, $p=.23$, were not significant. In general, participants did not report any significant increase in their knowledge level (with-ownership condition: $M_{\text{pre-knowledge}}=5.23$, $SD=.78$; $M_{\text{post-knowledge}}=5.21$, $SD=.69$; $t(33)=.30$, $p=.77$; without-ownership condition: $M_{\text{pre-knowledge}}=5.40$, $SD=.76$; $M_{\text{post-knowledge}}=5.24$, $SD=.78$; $t(24)=-1.28$, $p=.21$). The two groups did not differ in their pre-knowledge rating, $t(57)=.02$, $p=.98$, and post-knowledge rating, $t(57)=1.02$, $p=.31$. These results suggest that the mere ownership effect is domain specific.

Discussion

Study 2 showed that once the participants merely owned a piece of coffee chocolate, they reported a lower level of sleepiness compared to participants who did not own the chocolate. This result was not due to a priming effect or a mere proximity of the chocolate because the chocolate was similarly positioned in front of the participants in both conditions. The results also eliminated the alternative explanation of the transmission model (White, 2009) as participants in both groups could physically interact with the chocolate. Lastly, the effect was not due to a positive mood. Our finding was consistent with the study of Beggan (1992) that the mere ownership effect was not reducible to the mere exposure to the object nor was it related to mood.

Participants in the with-ownership condition reported a higher intention to "consume" the

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object than participants in the without-ownership condition. This may imply that they might have imagined consuming the object, leading to the enjoyment of the effects. Indeed, research on mental imagery has shown that actual and imagined consumption share similar physiological (Huber & Krist, 2004) and neurological (Kosslyn et al., 2001) processes that affect behaviors in a similar way (Wohldmann et al., 2007). Besides, researchers reported that anticipating the rewards of an object would also trigger the behavioral intention of using the object (Dadds et al., 1997; Kavanagh et al., 2005; Kemps & Tiggemann, 2007; Lang, 1977). Based on these, it seems that ownership would induce people to imagine consuming the object and to expect obtaining a positive reward from the object, both would trigger an intention to use the object. We measured both imagined consumption and reward anticipation in Study 3.

There is one more reason to examine reward anticipation. Motivation to self-enhance is suggested to be the mechanism underlying the traditional mere ownership effect. Past research showed that reward anticipation has a motivational source. Studies of false hope syndrome (Polivy, 2001, Polivy & Herman, 2000, 2002) and valuation motivation (Weinstein, 1980, Sedikides, Skowronski, & Gaertner, 2004) reported that when people are motivated to achieve a goal, they would form inflated expectations of self-change, or hold unrealistic positive expectation of life. Additionally, the process of anticipating a reward might be equivalent to that of activating a relevant motive. It was found that when participants anticipated a potential reward, their efficacy (e.g., memory ability) have enhanced (Mather & Schoeke, 2011), and such finding echoes the brain research finding that dopaminergic systems responsive to motivationally relevant information also enhance memory efficacy (Shohamy & Adcock, 2010). Based on these, examining the mediating role of reward anticipation (which stems from the motive to self-enhance) on the mere ownership effect would enable us to test the motivational hypothesis.

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Study 3

We adopted a randomized controlled-experiment. The object used was a bottle of flower essence. We framed the flower essence as having a function of creating an olfactory experience that could improve one's creativity. We examined whether participants would perceive themselves as being more creative upon the mere ownership of flower essence. Instead of giving participants genuine flower essence, we gave them olive oil[7], so any subsequent enhancement in their creativity efficacy was just a psychological illusion.

In order to eliminate potential demand effects, three modifications were made. First, pre-test measures were removed. Second, the dependent variable was measured using a battery of items instead of a single item (see DeVellis, 2003; Diamantopoulos, Sarstedt, Fuchs, Wilczynski & Kaiser, 2012). Third, participants' perceived self-efficacy was directly measured in order to examine if participants had integrated the functional property of the object into their self-concept. In Study 3, participants received the flower essence from the experimenter. This no-choice deisgn was used to eliminate cognitive dissonance (Beggan, 1992; Gawronski et al., 2007; cf. Watson & Winkelman, 2005) such as "*I have higher efficacy because I made the choice myself*" (see Festinger, 1957; Linder, Cooper & Jones, 1967).

Based on our previous findings, we measured participants' mood, behavioral intention, imagined consumption and reward anticipation (we also explored a number of psychological variables that are theoretically related to the concept of self-efficacy. Summary of these variables is provided as supplementary materials).

[7] The idea of using olive oil instead of genuine flower essence was inspired by the placebo studies, which usually use inert substances as stimuli. The difference between our study and the general placebo studies is that in placebo studies, participants actually consumed the inert object, but in our study, participants did not consume the object, they only merely owned the inert object.

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Participants. Ninety-six Hong Kong university students (74 females, M_{age}=19.5, *SD*=1.21) were recruited through mass emails and posters on the university campus. Participants signed up online where they confirmed that they had met the criteria of not using flower essence in the past six months. They were later contacted by the experimenter and randomly assigned to either the with-ownership condition (*N*=48) or the without-ownership condition (*N*=48). They were paid HK$50 (~$6.50 US) for their participation. Before any manipulation, participants' motive to be creative (4 items, Cronbach's α=.75; e.g., "*I want to be creative",* 1=*strongly disagree,* 7=*strongly agree*) was measured. To reduce the demand effect, we also included distractor items measuring other motives (e.g., "*I want to be more concentrated*").

Cover Story. Participants were told a cover story that the study was a collaboration project with a (fictitious) European flower essence company that intended to expand its market to Asia. Participants completed a marketing survey concerning their perception of the company's products. Specifically, they saw twelve pictures depicting different packaging styles of the flower essence products, and evaluated each picture in terms of their preference and buying intention. They then read a leaflet introducing the background of the company and its products. Specifically, they read the scientific basis and effectiveness of the use of flower essences. They also read pictures of three different flower essences and their respective ingredients and functions. Following this, three bottles of flower essence were placed on their desks for their inspection. They were allowed to touch the bottles and were encouraged to examine the labels to learn about the ingredients and functions. They read a guideline on how to use and store the essence. Finally, they completed another short marketing survey asking about the functions and storage of these three flower essences.

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In the with-ownership condition, participants were told that in order to thank them for their participation in the marketing survey, they would receive a bottle of flower essence as a token of appreciation. The experimenter pretended to make a random draw to gift a bottle of flower essence (out of the three) to the participants. In reality, all participants received a bottle of "creativity-boosting" flower essence. In order to establish a feeling of ownership over the given essence, participants signed a form to indicate their receipt of the essence. Participants in the without-ownership condition went through the same procedures, but they did not receive any flower essence as a gift.

After a short break, all participants were asked to complete a questionnaire measuring their creativity efficacy and mood, followed by questionnaires measuring their imagined consumption, reward anticipation, and behavioral intention. At the end, they were asked to indicate their attitude of flower essence ("*Do you like flower essence?*", 1=*dislike*, 7=*like*) and functional belief ("*Do you believe that the flower essence can improve your creativity?*", 1=*not at all*, 7=*very much*). A manipulation check was conducted to see if participants correctly identified their ownership status ("*Have you received a sample of flower essence as a complimentary gift to you*?"). They were probed for suspicion and invited to guess the hypothesis. None of them showed suspicion or correctly guessed the hypothesis. They were paid and received a full debriefing session as to the purpose and deception aspect of the study.

Materials

Creativity efficacy. Participants were asked to indicate their degree of agreement (*1=strongly disagree*; *7=strongly agree*) on seven items measuring their creativity efficacy (3 items were adopted from Tierney and Farmer's (2002) Creative Self-efficacy (CSE) scale, e.g., "*I have a knack for further developing the ideas of others*"; one item from Tan et al.'s (2011) creativity subscale of

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the Multidimensional Creativity Self-efficacy (MCSE) scale, e.g., "*I am good at combining existing ideas*"; and we created three items, e.g., "*I am confident that I can think or do things that no one else had thought about or done before"*). These items were averaged to give a mean creativity efficacy score (Cronbach's α=.80). To avoid the demand effects, these target items were randomly embedded amid other distractor items measuring other efficacies (seven items measured social-related efficacy, Cronbach's *α*=.75, e.g., "*I have high social competence*"; and six items measured cognitive-related efficacy, Cronbach's *α*=.81, e.g., "*I am able to make decision quickly*").

Mood. The 20-item Positive and Negative Affect Schedule (PANAS, Watson et al., 1988) was used to measure participants' current state of affect. Participants were asked to rate (*1=not at all; 5=very much*) on the positive mood scale (10 items, Cronbach's α=.86) and the negative mood scale (10 items, Cronbach's α=.87) to indicate their emotional state.

Except for the PANAS, which used a 5-point Likert-type rating scale, the following scales used a 7-point Likert-type rating format (*1=strongly disagree; 7=strongly agree*) and the items were all randomized in their presentation order.

Imagined consumption. Three items measured participants' imagined consumption of flower essence ("*I can imagine how and under what circumstances I will use flower essence*"; *"I can imagine using flower essence as if I am using it right now";* "*It is difficult for me to imagine using flower essence*" *(reverse*)). The Cronbach's α of the three items was .59, and it raised to .77 when the reverse item was deleted. The two positive items were averaged to compute the imagined consumption score.

Reward anticipation. Three items were constructed to measure the extent participants anticipated the benefit (Cronbach's *α*=.80, e.g., "*I can envision flower essence to increase my creativity"*).

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Behavioral intention. Participants' intention to use the flower essence was measured by four items (Cronbach's α=.88, e.g., "*I am very eager to use flower essence right now"*).

It should be noted that in order to reduce potential demand effects, the items above were embedded among other distractor items (e.g., asking about concentration) so as to make the questionnaires appear not solely focused on creativity.

Results

All participants correctly identified their ownership status. No participants opened or used the flower essence during the experiment. A sensitivity power analysis revealed that assuming power=.80 and α=.05, our study allowed us to detect an effect of η_p^2>.08.

A one-way ANOVA was conducted. The main effect of ownership was significant, $F(1,94)=4.54$, $p=.04$, $\eta_p^2=.05$, $CI_{95\%}=[0.002, 0.13]$, observed power=.56. In general, once the participants owned a creativity flower essence, they reported a significantly higher creativity efficacy score (M=4.59, SD=.92) compared to participants who did not own the flower essence (M=4.24, SD=.67). As expected, participants in the with-ownership condition were able to better mentally visualize the consumption of the essence, showed higher tendency to expect reward from the essence, and had greater intention to use the essence than their counterparts in the without-ownership condition. The two groups did not differ in their intitial motive, belief, affect and attitude. Table 4 showed the corresponding means, standard deviations and t-tests. Correlations among ownership, creativity efficacy and the three psychological variables (imagined consumption, reward anticipation, and behavioral intention) were computed. Table 5 shows the corresponding correlation coefficients. Consistent with past studies (Dadds et al., 1997; Lang, 1977; Kavanagh et al., 2005; Kemps & Tiggemann, 2007), imagined consumption and reward anticipation were positively correlated with behavioral intention respectively. Both imagined consumption and

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reward anticipation were simultaneously positively correlated with creativity efficacy and ownership. Multiple regression analyses were conducted to assess whether imagined consumption and reward anticipation were significant mediators.

As Figure 4 illustrates, ownership was positively associated with reward anticipation (B=.46, t(96)=2.25, p=.03) (*a* path), and reward anticipation was positively associated with creativity efficacy (B=.23, t(96)=2.87, p=.005) (*b* path). As for the predictor-outcome association (*c* path), ownership was significantly associated with creativity efficacy (B=.35, t(96)=2.13, p=.04). Mediation analysis was tested using the bootstrapping method with bias-corrected confidence estimates (MacKinnon et al., 2004; Preacher & Hayes, 2004). The 95% confidence interval of the indirect effect was obtained with 5000 bootstrapped samples (Preacher & Hayes, 2008). Results supported the mediating role of reward anticipation in the relationship between ownership and creativity efficacy (B=.11, CI=.02 to .25). The direct effect of ownership on creativity efficacy became non-significant (B=.25, t(96)=1.51, p=.14) when controlling for reward anticipation. Same mediation analysis was conducted for imagined consumption. Our data did not support imagined consumption was a significant mediator (while *a* and *c* paths were significant, *b* path was not significant, B=.10, t(96)=1.61, p=.11; overall B=.07, CI=-.0003 to .21).

To test whether reward anticipation has a motivational source, a hierarchical regression analysis was conducted to predict reward anticipation based on motive, controlling for ownership status. Results showed that both ownership status, B=.26, t(96)=2.48, p=.01, and motive, B=.24, t(96)=2.41, p=.02, were signfiicant predictors of reward anticipation. Motive signfiicantly predicted reward anticipation after controlling for ownership status, R^2 change=.06, F(1,93)=5.82 p=.02, implying that reward anticipation has a motivational source.

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Lastly, a 2 (ownership: with vs. without) X 3 (efficacy scores: creativity efficacy, social-related efficacy, cognitive-related efficacy) MANOVA was conducted to check if the observed effect is domain specific. Our results showed that owning a creativity boosting flower essence increased participants' perceived creativity efficacy, but not their social-related efficacy ($M_{\text{with-ownership}}$=4.79, *SD*=.81; $M_{\text{without-ownership}}$=4.81, *SD*=.72; $F(1,94)=.01$, $p=.91$, $\eta_p^2=.0001$, $CI_{95\%}$=[0.000, 0.005], observed power=.05). Interestingly, participants owning a creativity boosting flower essence also perceived having higher cognitive-related efficacy ($M_{\text{with-ownership}}$=4.68, *SD*=.97; $M_{\text{without-ownership}}$=4.23, *SD*=.99), $F(1,94)=5.14$, $p=.04$, $\eta_p^2=.05$, $CI_{95\%}$=[0.003, 0.14], observed power=.61. This was probably due to that in the promotion leaflet, the flower essence was described as having the function to "increase one's cognitive-related ability especially creativity". As such, participants perceived having greater cognitive (but not social) efficacy in general.

Discussion

Study 3 showed that once participants owned the creativity flower essence, they integrated the functional property of the essence into their self-concept. Such implicit self-enhancement tendency (Kim & Johnson, 2015a) was manifested by higher perceived creativity efficacy. The mere ownership effect was related to participants' ability to mentally represent consuming the flower essence, and their intention to use the essence. Such effect was mediated by reward anticipation (which has a motivational source), providing support to the motivation hypothesis. Corroborating the findings of Beggan (1992) and our Study 2, the observed effect was not due to participants' mood or the priming effect.

General Discussion

The present study adopted various objects (reading package, lecture notes, chocolate, flower essence) and methodological designs (quasi-experiment vs. controlled-experiment; pre- and post-

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test design vs. post-test-only design; student vs. public sample; single vs. multiple-item measures) that complemented each other to provide internal and external validities that improve the generalizability of the findings. Table 6 summarizes the demographic details of the participants assigned to each condition for each study.

Past studies on the mere ownership effect generally suggest that ownership could alter one's evaluation of the owned object, and that the positive evaluation of the owned object is inferred as an act of self-enhancement (Beggan, 1992; Belk, 1998; Kim & Johnson, 2012, 2014, 2015a). In these prior studies, the target being evaluated was usually the *object* per se. If the mere ownership effect is due to people's motive to self-enhance, then owning an object that is functional to the self could possibly alter one's belief in their self-efficacy. We tested this by specifically examining people's evaluation of the *self* per se. In a series of study, we showed that participants believed the self became more knowledgeable after owning the learning materials (Study 1); more resilient to sleepiness after owning the sleepiness-combating chocolate (Study 2); and more creative after owing the creativity boosting flower essence (Study 3). Our results provide support to the motivational hypothesis.

The results have implications for understanding the marketplace and consumer psychology. For example, this mere ownership effect may contribute partly to consumer dissatisfaction. If consumers falsely perceive that they have obtained the functional property of the product upon its mere acquisition, it may elevate their post-purchase expectancy to an unrealistic level, and thus contribute to consumer dissatisfaction (see Oliver, 1980, 1981). More work may be needed to determine the circumstances that are most conducive to this new form of the mere ownership effect versus the traditional mere ownership effect. Future studies could explore what type of products or

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individuals would be more susceptible to these two forms of mere ownership illusions, how long the illusion lasts, and what factors would strengthen or weaken the illusion.

The present findings also offer a new perspective on interpreting other social psychological phenomena, such as the placebo effect. When patients were given an inert pill, the mere ownership (prior to consumption) of the pill might be sufficient to enhance the patients' perceived efficacy to cope with the illness, which in turn alleviates their illness. Future studies should examine the role of mere ownership of an inert object on the effectiveness of placebo treatment. In addition, while past placebo studies showed a psychological/physical change *after* consuming an inert object, our study showed a cognitive perceptual change by merely owning an object *before* consuming it. It seems that the observed mere ownership effect could be a precursor of the placebo effect, i.e., merely owning an inert object activates the initial stage of the placebo cycle, and the actual consumption of the object completes the cycle. This worth further investigation.

Consistent with placebo studies which suggest that motive and expectancy mediate the placebo effect (see Hyland, 2011; Hyland & Whalley, 2008; Kirsch, 1997; Kirsch & Hyland, 1987; Shiv et al., 2005), our study found that reward anticipation (which was motive relevant) mediated the observed mere ownership effect. Nevertheless, as our study is the first attempt to uncover this new form of the mere ownership effect, the results should be interpreted with caution. More studies are needed to replicate and validate the finding, for instance, to manipulate reward anticipation to examine its causal role, and to empirically demonstrate it is a mediator across different objects. In order to provide a more direct test of the motivational account, future studies could introduce self-threat to participants to motivate them to self-enhance and observe the magnitude of the mere ownership effect. We expect that the mere ownership effect would become stronger when people's self-concept is threatened.

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In our studies, we have focused on whether people believed they have acquired the functional property of objects through merely owning them. By doing so, we limited ourselves to positive properties (e.g., knowledge gain, sleepiness resilience, and creativity). Of course, objects could come with adverse costs as well as benefits (e.g., chocolate would make you less healthy). It is an interesting and open question as to whether people feel they have incurred the costs of objects by mere ownership. Future research should provide empirical evidence and explore the possibility of people acquiring objects with negative property.

In this current study, the participants were mostly female and the objects used (i.e., chocolate, flower essence) had relatively more feminine than masculine characteristics. Future study should include a more variety of objects with feminine, masculine and neutral characteristics and examine if there are any potential gender differences. Furthermore, in this study although participants were allowed to touch the objects, the touch duration and frequency were not recorded. This could be potential confounds. Future studies should have a stricter control.

Mere ownership has two forms: self-chosen ownership and other-chosen ownership. In our study, participants received the object from the experimenter. Past research suggested that people hold a more positive attitude towards an object when it was self-chosen than other-chosen (Huang et al., 2009). However, a study also showed that people high in interdependence (e.g., Easterners) prefer choices others made on their behalf (Pöhlmann et al., 2007). In our study, participants were all Asians. Future studies should consider testing a self-chosen ownership situation and including Western samples. In addition, future studies should include situation when people are granted ownership but no physical possession of the object, i.e., psychological ownership (Pierce et al., 2003) or perceived ownership (Peck & Shu, 2009).

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In conclusion, the traditional mere ownership effect is a powerful demonstration of how the self can come to influence what we think about our objects. Our study suggests that the objects we own change how we think about ourselves. Like the traditional mere ownership effect, the observed mere ownership effect appears to be irrational. People believe that their ability change in response to owning objects that they have not yet used, and thus cannot benefit from. It appears that Shakespeare was correct when he wrote that "*the clothes maketh the man*", but perhaps you don't even have to put them on.

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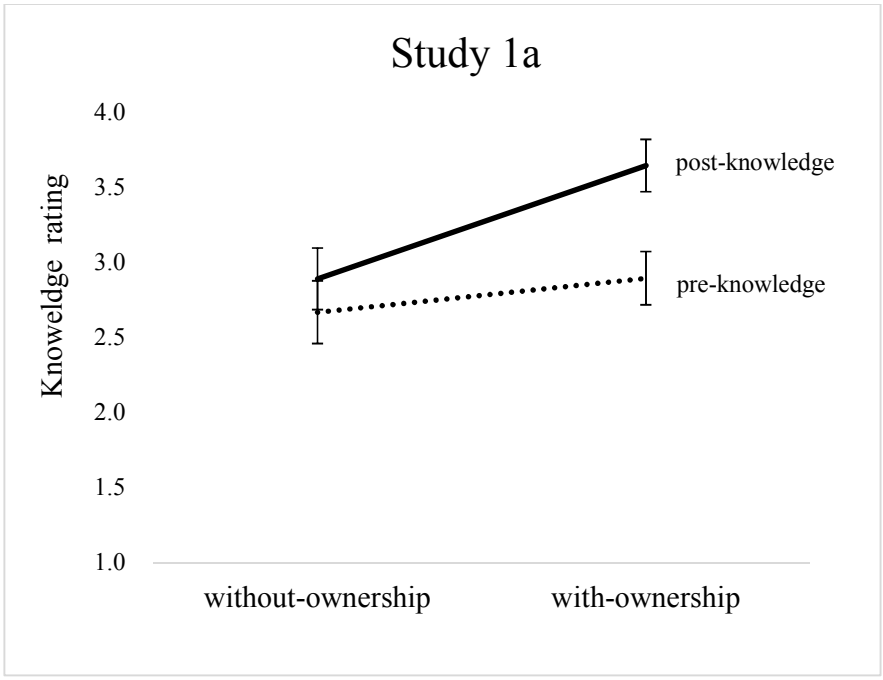


Figure 1. *The pre- and post-knowledge ratings on the presentation topic for the without-ownership condition and with-ownership condition (Study 1a).*

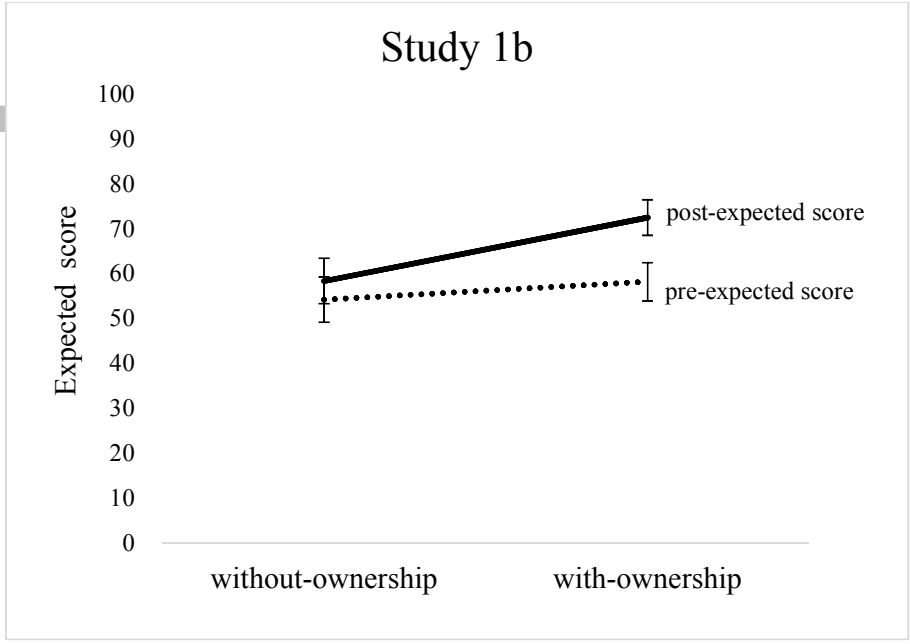


Figure 2. *The pre- and post-expected score on quiz for the without-ownership condition and with-ownership condition (Study 1b).*

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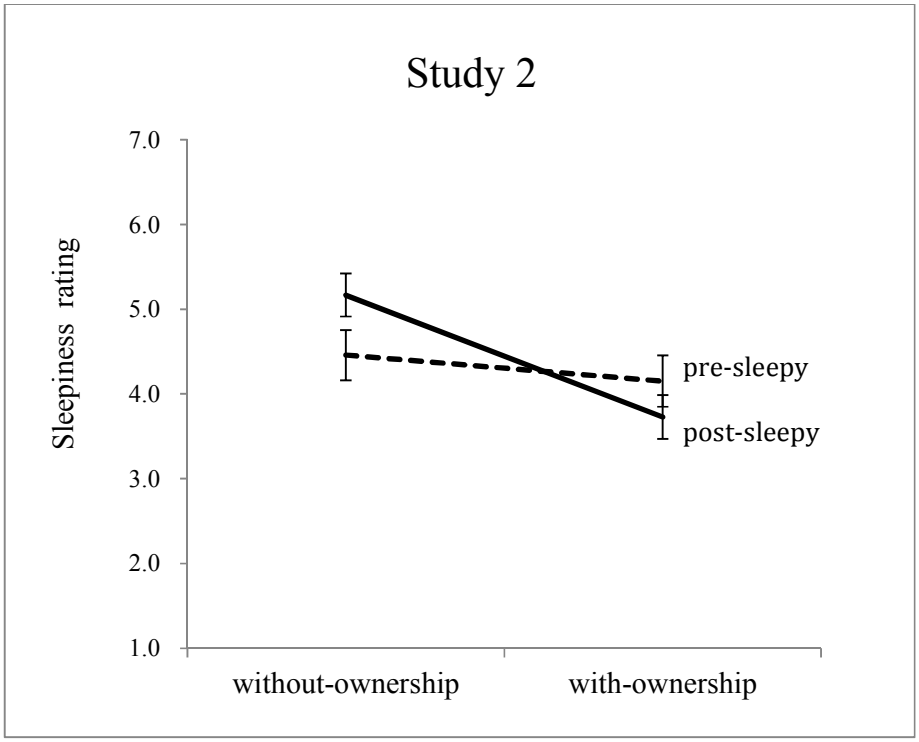
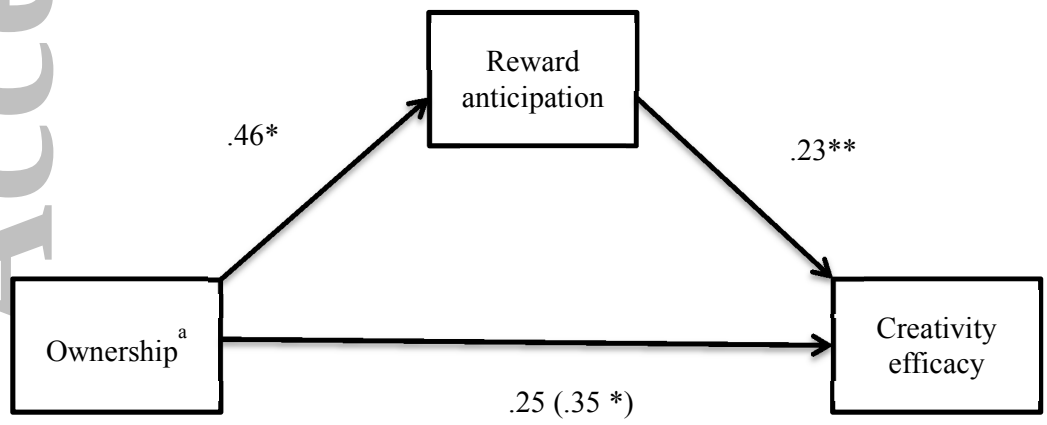


Figure 3. *The pre- and post-sleepy ratings for the without-ownership condition and with-ownership condition (Study 2).*



*Note. *p<.05; ** p<.01*

[a] without-ownership=0, with-ownership=1

Figure 4. Indirect effect of ownership on creativity efficacy through reward anticipation (Study 3)

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Table 1. The number and percentage of participants with different knowledge rating tendencies in without-ownership and with-ownership conditions (Study 1a)

	without-ownership (*N*=27)		with-ownership (*N*=27)	
Knowledge rating tendency	Frequency (*n*)	Percentage (%)	Frequency (*n*)	Percentage (%)
Decreased (post < pre)	2	7.4	2	7.4
Increased (post > pre)	8	29.6	15	55.6
No change (post = pre)	17	63	10	37

Table 2. The number and percentage of participants with different score expectation tendencies in without-ownership and with-ownership conditions (Study 1b)

	without-ownership (*N*=24)		with-ownership (*N*=27)	
Score expectation tendency	Frequency (*n*)	Percentage (%)	Frequency (*n*)	Percentage (%)
Decreased (post < pre)	5	20.8	1	3.7
Increased (post > pre)	9	37.5	17	63
No change (post = pre)	7	29.2	5	18.5
Missing data	3	12.5	4	14.8

Table 3. The number and percentage of participants with different sleepiness rating tendency in without-ownership and with-ownership conditions (Study 2)

	without-ownership (*N*=25)		with-ownership (*N*=34)	
Sleepiness rating tendency	Frequency (*n*)	Percentage (%)	Frequency (*n*)	Percentage (%)
Decreased (post < pre)	2	8.0	11	32.4
Increased (post > pre)	12	48	3	8.8
No change (post = pre)	11	44	20	58.8

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Table 4. The means, standard deviations and t-test of various tested variables (Study 3)

Variables	without-ownership *M* (*SD*)	with-ownership *M* (*SD*)	*t*-test
Imagined consumption	3.83 (1.46)	4.52 (1.11)	$t(87.76)^a$ =-2.60, p=.01
Reward anticipation	3.94 (.98)	*4*.40 (1.01)	$t(94)$=-2.25, p=.03
Behaviorial intention	3.88 (1.25)	4.54 (1.20)	$t(94)$=-2.66, p=.01
Motive	5.41 (.70)	5.20 (1.00)	$t(94)$=1.18, p=.24
Belief	3.25 (1.28)	3.52 (1.24)	$t(94)$=-1.05, p=.30
Postiive affect	2.37 (.63)	2.36 (.68)	$t(94)$=.08, p=.94
Negative affect	1.63 (.65)	1.50 (.55)	$t(94)$=1.10, p=.27
Attitude	4.08 (1.16)	4.23 (1.13)	$t(94)$=-.62, p=.53

[a] Levene's test showed the equality of variance assumption was violated, F=4.63, p=.03.

Table 5. Correlations among ownership, creativity efficacy and potential variables (Study 3)

	Ownership[a]	Creativity efficacy	Behavioural intention	Imagined consumption
Creativity efficacy	.22*			
Behavioural intention	.27**	.15		
Imagined consumption	.26**	.21*	.61***	
Reward anticipation	.23*	.32**	.65***	.44***

N=96; *** p<.001; ** p<.01; * p<.05 (2-tailed)

[a] without-ownership=0, with-ownership=1

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Table 6. The demographic details of the non-excluded participants assigned to each condition in each study.

Study	object	without-ownership condition		with-ownership condition		
		n (Female, Male)	M_{age} (*SD*)	*n* (Female, Male)	M_{age} (*SD*)	Total (*N*)
1a	Reading package	27 (F=20, M=7)	20.78 (1.58)	27 (F=21, M=6)	20.85 (.95)	54
1b	Lecture notes	24 (F=20, M=4)	17.92 (.50)	27 (F=22, M=5)	20.81 (.96)	51
2	Chocolate	25 (F=25, M=0)	28.86 (5.91)	34 (F=33, unidentified=1)	28.76 (6.00)	59
3	Flower essence	48 (F=42, M=6)	19 (1.09)	48 (F=32, M=16)	20 (1.14)	96

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