

## Role of Regulatory Focus: Influence of Loss and Gain Upon Perception of Past/Future Time

**PEI-HSUN WU**

Department of International Business,  
National Taichung University of Science and Technology.

**MEI-CHING HUANG**

Department of International Business,  
National Taichung University of Science and Technology.  
Email: [maggiehuang@nutc.edu.tw](mailto:maggiehuang@nutc.edu.tw)  
Tel: +886422196646

**CHIA-HSUN LIN**

Department of International Business,  
National Taichung University of Science and Technology.

### Abstract

*Discussions over influence of future losses or gains on subjective perception of time have been made in existing researches. However, it is found in no research the study on influence of past losses or gains on subjective perception of time. By conducting two experiments (with adjusting the focus served as a measure mode in Experiment 1 and as a manipulation mode in Experiment 2), this study suggests that: perceived time of future losses is shorter than that of future gains after the same time interval ( $H_1$ ); perceived time of past gains is shorter than that of past losses ( $H_2$ ), subjectively perceived time of the prevention focus consumers for future losses is shorter than that of the promotion focus consumers after the same interval ( $H_3$ ); subjectively perceived time of the promotion focus consumers for past losses is shorter than that of prevention focus consumers after the same time interval ( $H_4$ ); subjectively perceived time of the prevention focus consumers for future gains is shorter than that of the promotion focus consumers after the same time interval ( $H_5$ ); and subjectively perceived time of the promotion focus consumers for past gains is shorter than that of the prevention focus consumers after the same time interval ( $H_6$ ).*

**Key Words:** Time Interval, Regulatory Focus, Goal Orientation.

### Introduction

Imaging two consumers, one is going to move from a smaller house to a bigger one which has more rooms, more interior designs, better living functions in the surroundings, and more green space in two months; to this consumer, moving from a smaller house to a bigger one is gains. The other consumer is going to move from a bigger house to a smaller one which has fewer rooms, is older, and with worse living functions and environment in two months; to this consumer, it is losses. Now, imaging another two consumers, one has moved from a smaller house to a bigger one for two months (gains), the other has moved from a bigger

house to a smaller one (losses) for two months. For these four abovementioned consumers, the former two are of future gains and future losses while the latter two are of past gains and past losses. What are their subjective perceptions of time is the major subject of this study. The study of subjective perception of time may help people to understand the decision and behavior of consumers, e.g. how consumers evaluate current or future consumption, or how much discount rate will be adopted in future transaction (Loewenstein, Read, & Baumeister, 2003); these are also influenced by how long the subjective perceived time is, besides the objective time. In addition, the behavior and decision of repeated consumption in the future by a consumer is likely to be influenced by the subjective perception of time (Morwitz, 1997); furthermore, subjective perceived time for the past might be helpful to explore the judgment by nostalgia, such as memory twists can be coupled with judgment by nostalgia (Taylor, 1991).

Researches on the factors influencing the perception of the past time interval have been conducted in the past (Faro, Leclerc, & Hastie, 2005; Fraisse, 1984; Vohs & Schmeichel, 2003; Zakay & Block, 1996, 1997); however, the influence of past gains or losses on subjective perception of time has never been explored. The factors influencing the perception of future time interval have also been studied in the past (LeBoeuf, 2006; Zauberman et al., 2009); recent literature has further argued that the consumers' subjective perceived time of future losses is shorter than that of future gains (Bilgin & LeBoeuf, 2010). The major goal of this study, besides duplicating the research of the influence of future gains or losses on subjective perception of time by Bilgin and LeBoeuf published in Journal of Marketing Research in 2010, is to explore the influence of past gains and losses on the subjective perception of time, and compare it with Bilgin and LeBoeuf's 2010 study to explore the difference of past gains and future gains in the subjective perception of time. We predict that the subjective perceived time of future losses will be shorter than that of future gains (people perceived that the time for future losses would come pretty soon due to the fear of losses and perceived that the time for future gains would come pretty late due to the expectation of future gains); and the subjective perceived time of past gains will be shorter than that of past losses (the perceived time passes pretty soon due to the happiness of past gains and the perceived time passes pretty slow due to the pain of past losses). The abovementioned inferences are based on the loss aversion theory, that is, losses, in contrast to gains, has more subjective impact (Kahneman & Tversky, 1984; Tversky & Kahneman, 1991), e.g. the pain of losing 100 USD has more impact on emotions than that of the happiness of gaining 100 USD (Kahneman & Tversky, 1979); if the pain is going to happen in the future, the time seems to go by pretty soon (subjective perceived time is shorter), and if the pain happened in the past, days seem to go slowly like years (the subjective perceived time is longer).

Besides, previous researches on perception for the past and the future did not consider the goal orientation of consumers, however, a lot of literature established in the goal-orientation had influence on the decision of consumers (Bettman, Luce, & Payne, 1998; Heath, Larrick, & Wu, 1999; Higgins, 2002). This study proposes that goal orientation will influence the subjective perception of time of past and future losses and gains. Goal orientation has been explored with understandability in the context of regulatory focus theory. Researchers consider self-regulation as a process of regulating behaviors by related goal and standard. Two types of goal-orientation have been proposed, promotion focus: focuses on gaining positive result, and prevention focus: focuses on minimizing negative result (Higgins, 1997). The major difference between promotion focus and prevention focus is the different sensitivities to positive results and negative results (Higgins, 1998). In the field of consumer psychology, goal orientation has been demonstrated as having the influence on the effect of possession (Endowment effect; Liberman, Idson, Camacho, & Higgins, 1999; see also Higgins, 2002), status quo bias (Chernev, 2004), framing effect (Jain, Lindsey, Agrawal, & Maheswaran, 2007), compromise effect, attractiveness effect (Mourali, Bockenholt, & Laroche, 2007), and the relative degree of taking price information as quality or sacrifice (Lin, Wu, Chuang, & Kao, 2007). However, no research has yet explored the influence of goal orientation on the subjective perception of time when facing past and future gains and losses.

Regulatory focus theory regards self-regulation as a process of people's attempt to regulate behaviors by related goal or standard, which proposes two types of goal orientation: promotion focus and prevention

focus. The distinction between these two is that promotion focus people concerns nurturance while prevention focus people concerns security (see Higgins, 1997, 1998). Wish and desire are the main subjects of self-regulation for promotion focus people, and responsibility and duty are the main subjects of self-regulation for prevention focus people. This theory also distinguishes that promotion focus people concern the existence of positive result, while prevention focus people concern the existence of negative result. Regulatory focus theory provides a fresh perspective of gains and losses, compared with the prospect theory (Kahneman & Tversky, 1979): promotion focus people concerns obtaining maximum gains, and prevention focus people concerns minimal losses. Forster et al. (1998) further propose the perspective of “goal looms larger” that losses looms larger than gains for prevention focus people, while gains looms larger than losses for promotion focus people.

Based on the “goal looms larger” concept (Forster et al., 1998), the distinguishing features of more fear of losses for prevention focus consumers and more anticipation of gains for promotion focus consumers imply different influences on the subjective perception of time when facing future and past losses or gains. The related theories and hypotheses are described in the following paragraphs.

## Theory Development and Hypotheses Formation

### The Influence of Future Gains or Losses and Past Gains or Losses on the Subjective Perception of Time

In an article published in Journal of Marketing Research, Bilgin and LeBoeuf (2010) argue that the consumers’ subjective perceived time of future losses is shorter than that of future gains; which is based on the theory of loss aversion; that is, losses, in contrast to gains, has more subjective impact (Kahneman & Tversky, 1984; Tversky & Kahneman, 1991), e.g. the pain of losing 100 USD has more impact on emotions than that of the happiness of gaining 100 USD (Kahneman & Tversky, 1979). Loss aversion has been demonstrated to have influence on many consumers’ behaviors, such as the decision in gambling (Kahneman & Tversky, 1984), the response to the increased price (Putler, 1992), and other consumers’ decision-making behaviors.

With regard to the way in which loss aversion influences the subjective perceived time of future gains or future losses, Bilgin and LeBoeuf (2010) propose three grounds, (1) as for the same value, losses looks bigger than gains (Kahneman & Tversky, 1979), which is generally due to a clue that increases the real proximity of perception (Ittelson, 1951); the subjective amount increased by losses will serve as a clue for increasing the proximity of perceived time, so that a consumer perceives the time of losses to be nearer than the time of gains (the sense that losses would happen earlier); (2) besides the literature of loss aversion claiming that losses have more impact than gains do, related literature also indicate that a negative event induce more procedures than positive even does (Wright, 1991) and losses extract more attentions than gains do (Baumeister et al., 2001; Rozin & Royzman, 2001; see also Carmon & Ariely, 2000); therefore, upcoming losses attract more attention than upcoming gains do, so that people focus more on losses and perceive that future losses would happen earlier than future gains do; (3) if expecting gains brings about the positive expectation and expecting losses brings about the negative fear, then people will speed up the losses (so that minimizing the fear) and delay the gains (so that maximizing the taste of happiness; Loewenstein, 1987), therefore, consumers would wish future losses to be nearer than future gains.

Based on the abovementioned inference, we duplicate the hypothesis of Bilgin and LeBoeuf (2010) as follows:

H<sub>1</sub>: The perceived time of the same interval before facing the upcoming future losses is shorter than the perceived time of the same interval before facing the upcoming future gains.

The main purpose of the study, however, is to explore the influence of the influence on the subjective perceived time of future losses and gains on the subjective perception of time. For example, It has been two months since a consumer moved from a smaller apartment to a bigger one. (past gains) and the other consumer faces the other way around. (past losses), then, which consumer may subjectively perceive the past two months as shorter? Meanwhile, from the perspective of loss aversion, the impact of losses is larger than that of gains (Kahneman & Tversky, 1984; Tversky & Kahneman, 1991); therefore, the impact of past losses is larger than that of past gains. However, the inference of past gains and losses is different from pervious inference of future gains and losses; when facing future gains and losses, due to impact of losses being larger than that of gains, people fear the coming of future losses but expect the coming of future gains, and fear of losses shortens the subjective perceived time and expectations of gains lengthens the subjective perceived time. On the contrary, when facing past losses, i people feel a sense of pain rather than a sense of fear which lengthens the subjective perceived time (days goes by like years ); on the other hand, when facing past gains, people feel a sense of happiness rather than a sense of expectation, which shortens the subjective perceived time (time goes by especially faster in happiness). The abovementioned inference implies that the subjective perceived time of past happiness is shorter than that of past pains. Based on the perspective of losses extracting more attentions than gains do (Baumeister et al., 2001; Rozin & Royzman, 2001; see also Carmon & Ariely, 2000), upcoming losses extracts more attentions than upcoming gains do, so that people focus more on losses and subjectively perceive that upcoming losses would happen earlier than upcoming gains; however, for past losses, due to losses extracting more attentions than gains do, people sense more pains than happiness, the subjective perceived time for past losses is likely to be lengthened. Besides, if expecting gains brings about the positive emotion and expecting losses brings about the negative fear, then people will speed up the losses (so as to minimize the fear) and delay the gains (so that maximizing the taste of happiness; Loewenstein, 1987), therefore, consumers tend to expect future losses to happen earlier than future gains. On the contrary, when facing past losses, people do not have the negative fear brought about by waiting for future losses to shorten the subjective perceived time; instead, the pains brought about by past losses lengthen the subjective perceived time; and when facing past gains, people do not have the positive expectation brought about by waiting for future gains to lengthen the subjective perceived time; instead, the happiness brought about by past gains shortens the subjective perceived time. Based on the abovementioned inference, the study proposed the following hypothesis:

H<sub>2</sub>: In spite of the same interval, the perceived time for past losses is shorter than the perceived time for future gains.

### **The influence of future losses or past losses on the subjective perception of time: the role of goal orientation**

Regulatory focus theory regards self-regulation as a process of people's attempt to regulate behaviors by related goal or standard, which proposes two types of goal orientation: promotion focus and prevention focus. The distinction between these two is that promotion focus people concerns nurturance while prevention focus people concerns security. Wish and desire are the main subjects of self-regulation for promotion focus people, and they adopt approach strategies to achieve their expected goals (e.g.: practicing a couple of hours a day to become an excellent tennis player); on the contrary, responsibility and duty are the main subjects of self-regulation for prevention focus people, and they adopt avoidance strategies to achieve their expected goals (e.g.: quitting smoking to become an excellent tennis player) (see Higgins, 1997, 1998). Chernev (2004) indicates that the differences between promotion focus and prevention focus can be classified as the following three (1) with regard to personal demand for security, promotion focus people concerns growth and development while prevention focus people concerns safety and preservation; (2) promotion focus people focus on ideal self, reflecting personal wish and desire, while prevention focus people focus on what must be done, reflecting personal responsibility and obligation; and (3) promotion focus people concern the existence of positive result, while prevention focus people concern the existence of negative result.

Regulatory focus theory provides a fresh perspective of gains and losses, compared with the prospect theory (Kahneman & Tversky, 1979): people with promotion focus concern obtaining maximum gains, and people with prevention focus concern minimal losses. Forster et al. (1998) further propose the perspective of “goal looms larger” that losses looms larger than gains for prevention focus people, while gains looms larger than losses for promotion focus people.

The current study proposes that the influence on a consumer’s subjective perception of time when facing past or future losses or gains is a function of the consumer’s goal orientation. Firstly, as to how consumers perceive future losses, due to a consumer with prevention focus being more afraid of losses, the subjective perceived time of a prevention focus consumer is shorter than that of a consumer with the promotion focus; Secondly, as to the way consumers face past losses, due to a prevention focus consumer being more painful, the subjective perceived time of a prevention focus consumer is longer than that of a promotion focus consumer. The abovementioned inference can be more clearly presented as follows:

H<sub>3</sub>: When facing the future losses after the same interval, the perceived time of consumers with prevention focus is shorter than that of consumers with promotion focus.

H<sub>4</sub>: When facing the past losses after the same interval, the perceived time of consumers with prevention focus is longer than that of consumers with promotion focus.

#### **The influence of future gains or past gains on the subjective perception of time: the influence of goal orientation**

Similarly, when it comes to how consumers face future gains, due to consumers with promotion focus pay more attention to gains, they perceive that time goes by more slowly. That is, the subjective perceived time of a promotion focus consumer is longer than that of a prevention focus consumer; and when it comes to past gains, due to a consumers with promotion focus pay more attention to gains, they perceive that time goes by faster. That is, the subjective perceived time of a promotion focus consumer is shorter than that of a prevention focus consumer. The abovementioned inference can be more clearly presented as follows:

H<sub>5</sub>: When facing future gains after the same interval, the perceived time of consumers with promotion focus is longer than that of consumers with prevention focus.

H<sub>6</sub>: When facing the past gains after the same interval, the perceived time of consumers with promotion focus is shorter than that of consumers with prevention focus.

## **Experiment**

### **Experiment 1**

- (1). Goal: the goal of experiment 1 is to test H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub>, H<sub>4</sub>, H<sub>5</sub>, and H<sub>6</sub>.
- (2). Design: experiment 1 adopts a 2 (“time”: past vs future) x 2 (“losses or gains”: losses vs. gains) x 2 (“regulatory focus”: promotion focus vs. prevention focus) within group design, wherein the regulatory focus variables are treated by a post measurement. The independent variables of the experiment are “time”, “losses or gains” and “regulatory focus”, and the dependent variables is the “subjective perception of time” of the subjects.
- (3). Subjects: subjects are college students, who are randomly distributed into four experimental situations, each of which has 50 subjects. Every subject receives a Post-it as a gift.



- (4). Experimental stimuli: adopting simulated questions regarding house moving as experimental stimuli. There are four groups in the experiment. The first group deals with future losses (situation description: without considering other conditions (e.g. money), imagine you are about to move from a large stand-alone building with a private garage, fashioned interior design, better living functions in the surroundings, and larger green space to a small apartment with noisy neighborhood, no garage, and inconvenient living functions in two months). The second group deals with future gains (moving from a small apartment to a large stand-alone building). The third group related to past losses (having moved from to a large stand-alone building to a small apartment for two months). The fourth group is related to past gains (having moved from a small apartment to a large stand-alone building for two months).
- (5). Experimental procedures: subjects are divided into to four groups according to the experimental design. Subjects in each group read the description of different situations (including future losses, future gains, past losses, and past gains). After reading the situation description, subjects evaluate the perceived time subjectively. The subjects are asked questions regarding the sense of the two-month period. The measurement adopts Likert's seven-point scale, from very slow (7 points) to very fast (1 point). After answering the questions regarding subjective perception of time, every subject proceeds a measurement of goal orientation; the measurement is based on an 18-item scale developed by Lockwood, Jordan and Kunda (2002), whose descriptions are modified to fit the living experience of college students. The modification lead to a five-point scale, including totally disagree (1 point), disagree (2 points), neutral (3 points), agree (4 points), totally agree (5 points). The items for promotion focus are item no. 3, 5, 6, 8, 12, 14, 16, 17, and 18 in the question pool; the items for prevention focus are item no. 1, 2, 4, 7, 9, 10, 13, and 15 in the question pool. In order to achieve more precise classification of the goal orientation of the subjects, the classification is done by comparing the t sum of scores for promotion focus items and the sum of scores for prevention focus items. A subject is classified as a promotion focus person if the total scores of the promotion focus items are larger than those of the prevention focus items, and vice versa. Furthermore, if the total scores of the promotion focus items are equal to those of the prevention focus items, this sample is excluded. In addition, after finishing the questions for goal orientation, the subjects fill in the last two items regarding gender and age.
- (6). Results: in experiment 1, there are 48 male subjects (24%) and 152 female subjects. There are 114 subjects whose age ranges from 16 to 20, 57% and 86 subjects whose age ranges from 21 to 25, 43%. To test  $H_1$  and  $H_2$ , the two-factor analysis of variance is applied, wherein the independent variables are "time" (past vs. future) and "losses or gains", and the dependent variable is "subjective perception of time". The result shows that the main effect of "time" ( $p = .085$ ) and "losses or gains" ( $p = .107$ ) are insignificant; while the interaction effect is significant ( $p = .000 < .001$ ). In the condition of future, the group mean of "gains" ( $M = 4.40$ ) is significantly larger than the group mean of "past" ( $M = 3.04$ ) ( $t(98) = 4.964$ ;  $p < .001$ ). In the condition of past, the group mean of "past" ( $M = 5.00$ ) is significantly larger than the group mean of "gains" ( $M = 3.06$ ) ( $t(98) = 8.396$ ;  $p < .001$ ). Thus,  $H_1$  and  $H_2$  are supported by the experiment results.

To test  $H_3$ ,  $H_4$ ,  $H_5$ , and  $H_6$ , the classification of subjects' promotion focus or prevention focus is firstly conducted. The Cronbach's  $\alpha$  of prevention focus is .719 and the Cronbach's  $\alpha$  of promotion focus is .795 in terms of the validity of the scales. Then, the individual mean score of every subject's promotion focus scale and prevention focus scale is calculated; when the score of promotion focus scale is higher than that of prevention focus scale, the subject is classified as a promotion focus person; otherwise, a prevention focus person; if the score of promotion focus is equal to that of prevention focus, then the sample is excluded. The results show that there are 87 promotion focus persons, 95 prevention focus persons, and a total of 18 samples are excluded. In terms of future losses, the mean ( $M = 3.93$ ) of promotion focus ( $n = 15$ ) is significantly higher than the mean ( $M = 2.67$ ) of prevention focus ( $n = 30$ ) ( $t(43) = 2.806$ ;  $p < .01$ ); in terms of past losses, the mean ( $M = 5.46$ ) of prevention focus ( $n = 26$ ) is significantly higher than the mean ( $M = 4.50$ ) of promotion focus ( $n = 24$ ) ( $t(48) = 2.804$ ;  $p < .01$ ); in terms of future gains, the mean ( $M = 4.96$ ) of promotion

focus ( $n=25$ ) is significantly higher than the mean ( $M=3.80$ ) of prevention focus ( $n=20$ ) ( $t(43)=3.511$ ;  $p<.005$ ); in terms of past gains, the mean ( $M=3.58$ ) of prevention focus ( $n=19$ ) is significantly higher than the mean ( $M=2.57$ ) of promotion focus ( $n=23$ ) ( $t(40)=3.532$ ;  $p<.005$ ). Thus,  $H_3$ ,  $H_4$ ,  $H_5$ , and  $H_6$  are supported by the experiment results.

## Experiment 2

- (1). Goal: the goal of experiment 2 is the same as the goal of experiment 1. The only difference is that in experiment 1 the regulatory focus is post measured by scales, whereas the regulatory focus in experiment 2 adopts an manipulation method.
- (2). Design: experiment 2 adopts a 2 ("goal orientation": promotion focus vs prevention focus) x 2 ("time": past vs future) x 2 ("losses or gains": losses vs. gains) within group design, wherein the regulatory focus variables are treated by a post measurement. The independent variables of the experiment are "goal orientation", "time", and "losses or gains", and the dependent variable is the "subjective perception of time" of the subjects.
- (3). Subjects: subjects are college students, who are randomly distributed into eight experimental conditions, wherein each condition has 50 subjects. The subjects of experiment 1 and experiment 2 are independent. Every subject receives a Post-it as a gift.
- (4). Experimental stimuli: the design of experimental stimuli is the same as its counterpart in experiment 1 (future losses, future gains, past losses, and past gains); however, the theme is changed to the exchange of company's computers. The experimental stimulus of future losses group is an upcoming change of a computer with better performance, more application software to a computer with poorer performance, few application software in two months (as for the future gains group, the condition is reversed); the stimulus of the past losses group is a change of a computer with better performance, more application software to a computer with poorer performance, few application software, which has been done for two months (as for the past gains group, the condition is reversed).
- (5). Experimental procedures: the three independent variables are "goal orientation", "time" and "losses or gains", wherein a manipulation method is adopted to survey "goal orientation", while "time" and "losses or gains" adopts the questionnaires on simulated situations corresponding to the four conditions of the experimental stimuli. In the beginning of the experiment, the goal orientation is firstly manipulated. The manipulation method is also a condition description. In the promotion focus group, the description is that Andy is a 25-year-old, of single working class, who positively lives his life every day, likes creative thinking and adventures, longs to try fresh and interesting things, likes to pursuit excellence and success, and values the quality of life; every time he finds out that a new product hits the market, he will actively try the new product; he does not easily give up when he faces difficulties; instead, the difficulties strengths his determination of pursuing success. In the prevention focus group, the description is that Andy is a married worker living a regular life, who is prudent, and conservative, does not like adventures, follows the rules, is full of responsibility, finds the safest way to deal with things, wishes to live a stable life instead of pursuing great success, does not follow the fashion blindly; if there is a tool of more efficiency, he will not reject using it, but he will be content with the things that can work and he won't change his mobile phone until it breaks. After reading the description of the condition of promotion focus or prevention focus, subjects are required to answer two items of the manipulation test; one item is do you think Andy is a person full of passion and hope; the other is do you think Andy is a person who avoids taking risk and seeks security. The evaluation scale is from totally disagree (1 point) to totally agree (5 points).

After the manipulation of goal orientation, in the second part of the experiment the subjects are asked to imagine how Andy evaluates the subjective perception of time with respect to the four experimental

conditions (future losses, future gains, past losses, and past gains). The evaluation method is the same as that of experiment 1. There are a total of eight groups, with four groups for four conditions concerning promotion focus and four groups for four conditions concerning prevention focus respectively.

- (6). Results: with regard to the manipulation test of goal orientation, in the promotion focus part ( $N=200$ ), the mean of the manipulation test item 1 is 4.54 ( $M=4.54$ ), and the mean of item 2 is 2.21 ( $M=2.21$ ); the result of t-test for paired sample shows that the score of item 1 is significantly higher than the score of item 2 ( $t(199)=34.248$ ;  $p<.001$ ); in the prevention focus part ( $N=200$ ), the mean of the manipulation test item 1 is 1.96 ( $M=1.96$ ), and the mean of item 2 is 4.08 ( $M=4.08$ ); the result of t-test for paired samples shows that the score of item 1 is significantly higher than the score of item 2 ( $t(199)=39.081$ ;  $p<.001$ ); the result shows that the manipulation on goal orientation is successful. To test the hypothesis, the three-factor analysis of variance is applied, wherein the independent variables are “time” (past vs. future), “losses or gains”, and “goal orientation (promotion focus vs. prevention focus)”, and the dependent variable is “subjective perception of time”. The result shows that the interaction effect of “time” (past vs. future) and “losses or gains” is significant ( $p=.000 < .001$ ), and the interaction effect of the three factors is also significant ( $p=.011 < .05$ ). As for  $H_1$  and  $H_2$ , in terms of future condition, the mean of gains group ( $M=4.07$ ) is higher than the mean of losses group ( $M=3.41$ ) ( $t(198)=2.793$ ;  $p<.01$ ); in terms of past condition, the mean of losses group ( $M=4.93$ ) is higher than the mean of gains group ( $M=3.20$ ) ( $t(198)=10.466$ ;  $p<.001$ ). Thus,  $H_1$  and  $H_2$  are supported by the experiment results.

As for  $H_3$ ,  $H_4$ ,  $H_5$ , and  $H_6$  part, in terms of future losses, the mean ( $M=3.98$ ) of promotion focus ( $n=50$ ) is higher than the mean ( $M=2.84$ ) of prevention focus ( $n=50$ ) ( $t(98)=3.954$ ;  $p<.001$ ); in terms of past losses, the mean ( $M=5.40$ ) of prevention focus ( $n=50$ ) is higher than the mean ( $M=4.46$ ) of promotion focus ( $n=50$ ) ( $t(98)=3.955$ ;  $p<.001$ ); in terms of future gains, the mean ( $M=5.30$ ) of promotion focus ( $n=50$ ) is higher than the mean ( $M=2.84$ ) of prevention focus ( $n=50$ ) ( $t(98)=9.437$ ;  $p<.001$ ); in terms of past gains, the mean ( $M=3.64$ ) of prevention focus ( $n=50$ ) is higher than the mean ( $M=2.76$ ) of promotion focus ( $n=50$ ) ( $t(98)=4.575$ ;  $p<.001$ ). Thus,  $H_3$ ,  $H_4$ ,  $H_5$ , and  $H_6$  are supported by the experiment results.

## Discussion & Conclusion

Research in the past has explored the influence of future losses or gains on the subjective perception of time, but has not explored the influence of past losses or gains on the subjective perception of time. This study conducts a study on the subjective perception of time influenced by past losses and past gains, and argues that the subjective perceived time of past losses is longer than that of past gains, which is the reversal of the future conditions. The contribution of this study is the completion of the literature regarding the influence of losses and gains on subjective perception of time.

Besides, the study also explores influence of goal orientation on the subjective perceived time. In the past, the studies on goal orientation (promotion focus vs. prevention focus) have been extended to many consumption acts, such as, the influence of goal orientation on status quo bias, the influence of goal orientation on framing effect, the influence of goal orientation on variety-seeking behavior; however, no study has been conducted in influence on the subjective perception of time for future or past losses and gains.

This study finds that due to the more fear of prevention focus people feel for future losses, the subjective perceived time is shorter (compared with the promotion focus people); due to the focus on future gains, the subjective perceived time of promotion focus people is longer (compared with the prevention focus people); due to more of the focus on past losses for prevention focus people, the subjective perceived time is longer (compared with the promotion focus people); and due to more of the focus on past gains, the subjective perceived time of promotion focus people is shorter (compared with the prevention focus people). The study contributes to the extension of the goal-orientation study by applying it to the field of subjective perception of time.



## Acknowledgement

The authors acknowledge funding from the National Science Foundation, Taiwan R.O.C.

## References

- Baumeister, R. F., & Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, 5, 323-370.
- Bettman, J. R., Luce, M. F., & Payne, J. W. (1998). Constructive consumer choice processes. *Journal of Consumer Research*, 25(3), 187-217.
- Bilgin, B., & LeBoeuf, R. A. (2010). Looming losses in future time perception. *Journal of Marketing Research*, 47 (3), 520-530.
- Carmon, Z., & Ariely, D. (2000). Focusing on the forgone: How value can appear so different to buyers and sellers. *Journal of Consumer Research*, 27 (3), 360-370.
- Chernev, A. (2004). Goal orientation and consumer preference for the status quo. *Journal of Consumer Research*, 31 (3), 557-565.
- Faro, D., Leclerc, F., & Hastie, R. (2005). Perceived causality as a cue to temporal distance. *Psychological Science*, 16 (9), 673-677.
- Forster, J., Higgins, E. T. & Idson, L. C. (1998). Approach and avoidance strength during goal attainment: Regulatory focus and the 'goal looms larger' effect. *Journal of Personality and Social Psychology*, 75 (5), 1115-1131.
- Fraisse, P. (1984). Perception and estimation of time. *Annual Review of Psychology*, 35, 1-36.
- Heath, C., Larrick, R. P., & Wu, G. (1999). Goals as reference points. *Cognitive Psychology*, 38 (1), 79-109.
- Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, 52 (12), 1280-1300.
- Higgins, E. T. (1998). Promotion and prevention: Regulatory focus as a motivational principle. In: P. Z. Mark, ed. *Advances in Experimental Psychology*, vol. 30, pp.1-46. San Diego, CA: Academic Press.
- Higgins, E. T. (2002). How self-regulation creates distinct values: The case of promotion and prevention decision making. *Journal of Consumer Psychology*, 12 (3), 177-191.
- Ittelson, W. H. (1951). Size as a cue to distance: Static localization. *American Journal of Psychology*, 64 , 54-67.
- Jain, S. P., Lindsey, C., Agrawal, N., & Maheswaran, D. (2007). For better or for worse? Valenced comparative frames and regulatory focus. *Journal of Consumer Research*, 34 (1), 57-65.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47 (2), 263-291.
- Kahneman, D., & Tversky, A. (1984). Choices, values, and frames. *American Psychologist*, 39 (4), 341-350.
- LeBoeuf, R. A. (2006). Discount rates for time versus dates: The sensitivity of discounting to time-interval description. *Journal of Marketing Research*, 43 (1), 59-72.
- Liberman, N., Idson, L. C., Camacho, C. J., & Higgins, E. (1999). Promotion and prevention choices between stability and change. *Journal of Personality and Social Psychology*, 77 (6), 1135-1145.
- Lin, Chien-Huang, Wu, Pei-Hsun, Chuang, Shieh-Chieh, Kao, Danny T. (2007). Price as a quality or sacrifice cue: Role of goal orientation. *Asian Journal of Social Psychology*, 10 (3), 179-197.
- Lockwood, P., Jordan, C., & Kunda, Z. (2002). Motivation by positive or negative role models: Regulatory focus determines who will best inspire us. *Journal of Personality and Social Psychology*, 83 (4), 854-864.
- Loewenstein, G. (1987). Anticipation and the value of delayed consumption. *The Economic Journal*, 97, 666-684.
- Loewenstein, G., Read, D., & Baumeister, R. F. (2003). *Time and decision*. New York: Russell Sage Foundation.
- Morwitz, V. G. (1997). It seems like only yesterday: The nature and consequences of telescoping errors in marketing research. *Journal of Consumer Psychology*, 6 (1), 1-29.

- Mourali, M., Bockenholt, U., & Laroche, M. (2007). Compromise and attraction effects under prevention and promotion motivations. *Journal of Consumer Research*, 34, 234-247.
- Putler, D. (1992). Incorporating reference price effects into a theory of consumer choice. *Marketing Science*, 11 (3), 287-309.
- Rozin, P., & Royzman, E. W. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, 5 (4), 296-320.
- Tversky, A., & Kahneman, D. (1991). Loss aversion in riskless choice: A reference-dependent model. *Quarterly Journal of Economics*, 106, 1039-1061.
- Vohs, K. D., & Schmeichel, B. J. (2003). Self-regulation and the extended now: Controlling the self alters the subjective experience of time. *Journal of Personality and Social Psychology*, 85, 217-230.
- Zakay, D., & Block, R. A. (1996). The role of attention in time estimation processes. In: M. A. Pastor & J. Artieda, eds. *Time, Internal Clocks and Movement*. Amsterdam: Elsevier, North-Holland, 143-164.
- Zakay, D., & Block, R. A. (1997). Temporal cognition. *Current Directions in Psychological Science*, 6 (1), 12-16.
- Zauberman, G. B., Kim, K., Malkoc, S. A., & Bettman, J. R. (2009). Discounting time and time discounting: Subjective time perception and intertemporal preferences. *Journal of Marketing Research*, 46 (4), 543-556.

