Missing the best opportunity; who can seize the next one? Agents show less inaction inertia than personal decision makers ☆

Jingyi Lu [a,b], Huiyuan Jia [b], Xiaofei Xie [b,*], Qiuhong Wang [b]

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b

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ABSTRACT

Inaction inertia is a prevalent consumer decision bias, whereby missing a superior opportunity decreases the likelihood of acting on a subsequent opportunity in the same domain.

attractive as the previous ones). This is an economically rational approach as decision makers would still benefit from the next opportunity.

However, how people actually address bypassed opportunities in practice? is prevalent, whereby missing a superior opportunity decreases the likelihood of acting on a subsequent opportunity in the same domain (Tykocinski, Pittman, & Tuttle, 1995). Obviously, the descriptive behaviors violate the normative principle. Therefore, it is crucial to consider how to reduce inaction inertia. The present research seeks an answer to the above question from the perspectives of cognitive focus and the decision maker's role.

2. Inaction inertia

In a pioneering study, Tykocinski et al. (1995) informed participants that they had missed the discounted price of $40 of a ski card whose original price was $100. However, they were informed that they could still get the card for $90. Consequently, participants were unlikely to act on the present opportunity, thus demonstrating an inaction inertia effect.

Regret and devaluation are two explanations to interpret inaction inertia. From an emotional perspective, regret over missing a superior opportunity causes unwillingness to act on the current opportunity (Arkes, Kung, & Hutzel, 2002; Kumar, 2004; Tykocinski & Pittman, 1998, 2001). From a cognitive perspective, the evidence shows that discounted products are devaluated (Arkes et al., 2002; van Putten, Zeelenberg, & van Dijk, 2009; Zeelenberg, Nijstad, van Putten, & van Dijk, 2006). Considering the ski card study of Tykocinski et al. (1995), consumers perceived it as worth only $40, causing inaction inertia.

However, neither of the explanations is valid in all cases. For example, the research by Tykocinski and Pittman (2001) did not support for the devaluation explanation, whereas the research by Zeelenberg et al. (2006) did not support for the regret explanation. These conflicts suggest the potential existence of other explanations.

In this research, we propose a cognitive focus account to explain inaction inertia. Three elements are pivotal in the decision problem of the inaction inertia effect: , , and . Actually, the current opportunity can be perceived in two ways. will be perceived if it is compared to the original state, whereas will be perceived if it is compared to the missed opportunity. Because individuals are more sensitive to losses than gains (Kahneman & Tversky, 1979), the association between the current opportunity and the missed opportunity is stronger than that between the current opportunity and the original state, making the current opportunity less attractive. In other words, focusing on losses more than gains is responsible for inaction inertia.

Notably, some researchers have mentioned the cognitive focus account earlier. For instance, Tykocinski et al. (1995) wrote that "even though the subsequent action opportunity is still attractive, it may now be experienced as a loss rather than as a potential gain" (p. 794). However, they did not explicitly test this explanation.

Accordingly, one way to diminish inaction inertia is to instruct decision makers to pay more attention to gains and less to losses (van Putten, Zeelenberg, & van Dijk, 2013). Construal level theory assumes that the mental construal is affected by psychological distance, including temporal distance, spatial distance, social distance and hypotheticality (Trope & Liberman, 2010). Individuals adopt high-level mental construals when performing psychologically distant actions. In contrast, they adopt low-level mental construals when conducting psychologically close actions. Additionally, losses are at a lower construal level than gains (Eyal, Liberman, & Trope, 2004; Pennington & Roese, 2003). Taken together, larger psychological distance weakens the focus on losses but reinforces the focus on gains (Friling, Vincent, & Henard, 2014; White, MacDonnell, & Dahl, 2011), therefore diminishing inaction inertia.

Research confirms the above reasoning. For example, a large temporal distance between the two opportunities reduced the magnitude of inaction inertia (Zeelenberg et al., 2006). Moreover, the inaction inertia effect disappeared when the missed opportunity was spatially distant from the current one (Arkes et al., 2002). In summary, increased psychological distance weakens the focus on losses (the association between the current opportunity and the missed opportunity) but strengthens the focus on gains (the association between the current opportunity and the original state), thus amplifying the likelihood of acting on the present opportunity.

3. Personal decision maker vs. agent

It is notable that research on inaction inertia is largely limited to who make decisions for themselves. However, individuals also frequently act as who decide for others. For example, business consultants make decisions on behalf of their clients and doctors make decisions for their patients. The social distance between the decision maker and decision problem is closer in the case of making decisions for oneself than when making decisions for others

(Lu, Xie, & Xu, 2013; Polman, 2012a). Therefore, agents who are less close to the problem compared to personal decision makers are expected to focus less on losses and more on gains.

Empirical studies support this prediction. Beisswanger, Stone, Hupp, and Allgaier (2003) found that negative aspects were more salient for people who decided for themselves than for those who decided for others. Polman (2012b) showed that agents were less loss-averse than personal decision makers. In a more recent study, Lu and Xie (2014) asked participants to record their thoughts when choosing between a new option and a status quo option. The results demonstrated that agents considered fewer losses than personal decision makers.

The difference in cognitive focus would further lead to a difference in inaction inertia. Agents focus more on gains than losses relative to personal decision makers. Consequently, they tend to associate the current opportunity with the original state more than the missed opportunity compared to personal decision makers, which results in diminished inaction inertia.

4. The present research

We hypothesized that agents would show less inaction inertia compared to personal decision makers because they focused less on losses (the association between the current opportunity and the missed opportunity) and more on gains (the association between the current opportunity and the original state). Four studies were conducted to test the hypothesis. Study 1 was designed to investigate the relationship between the decision maker's role and inaction inertia. Studies 2 and 3 examined whether the difference in inaction inertia originated from the differences regarding a cognitive focus on gains or losses. The participants' cognitive focuses were either recorded using eye-tracking techniques (Study 2) or measured by a self-reported item (Study 3). Agents were hypothesized to focus more on gains but less on losses than personal decision makers. In Study 4, the participants were explicitly asked to focus either on gains or on losses. It was hypothesized that the differences regarding inaction inertia between the two types of decision makers would disappear and that both would show less inaction inertia when induced to focus on gains than on losses.

5. Study 1

Study 1 was designed to test whether agents were less prone to inaction inertia than personal decision makers. Participants who acted either as personal decision makers or agents were informed that they had missed an opportunity to register for a 500 RMB (Renminbi) course whose original price was 1000 RMB. They decided whether to register for the course at 800 RMB either for themselves or their friend.

Seventy-nine undergraduates (14 men, 65 women; $_{age}$ = 20.72 years) agreed to participate in the study in exchange for course credit. They were randomly assigned to one of two roles: a personal decision maker or an agent.

Following the procedure of Lu and Xie (2014), we asked participants who were acting as personal decision makers to describe themselves and those who were acting as agents to describe a friend. The task directed participants to think of specific people. The participants wrote down their surnames (or their friend's surnames), gender and age. They then considered whether the 8 given adjectives (i.e., passionate, careful, rational, withdrawn, responsible, depressive, decisive, and peaceful) were appropriate for describing themselves or their friends on a scale from 1 ( ) to 7 ( ).

Next, in the personal decision maker condition, a scenario in which the participants were planning to learn Spanish was presented. The original price for a course was 1000 RMB; however, they could register for the course at a discounted price of 500 RMB. Unfortunately, they missed the opportunity. The current price had since increased to 800 RMB. For agents, the scenario showed that the friend who had been described was planning to learn Spanish and asked the participants to decide for him/her.

As a manipulation check, participants indicated their role in the decision problem. Next, personal decision makers rated the probability of registering for the course at the current price on a 9-point scale from 1 ( ) to 9 ( ). A higher score indicated less inaction inertia. Thereafter, they decided whether to register for the course. The agents rated the probability of their encouraging the friend to register based on the same scale. They were then asked to decide for their friend whether to register.

Next, the participants rated their regret ("Will you be regretful if your decision is not good?" 1 = , 9 =), the effort exerted for the task ("Did you consider the decision problem carefully?" 1 = , 9 =), the difficulty of this task ("How difficult is the task?" 1 = , 9 =) and perceived responsibility ("Do you feel responsible for the decision outcome?" 1 = , 9 =). Finally, demographic information (i.e., gender and age) was collected, and the participants were thanked and debriefed.

Two participants who failed the manipulation check were excluded. Personal decision makers and agents did not differ with regard to the ratings of regret, effort, task difficulty, responsibility, gender and age, s > .10.

To test the hypothesis that agents would show less inaction inertia than personal decision makers, an analysis of variance (ANOVA) on probability with role as the independent variable revealed a significant effect for role, (1, 75) = 4.98, = .029, η^2 = .06. As hypothesized, agents (= 6.34, = 2.16) were more likely to register for the course at the current price than personal decision makers (= 5.13, = 2.59).

Moreover, a chi-square test showed that the decision was determined by the role, χ^2(1, = 77) = 10.00, = .002. In the personal decision maker condition, 53.8% of the participants registered for the course at the current price. However, in the agent condition, 86.8% registered for their friends.

These results indicated that agents were less susceptible to the inaction inertia effect compared to personal decision makers. The following studies aimed at investigating the reasons for such a difference and we examined the role of cognitive focus.

6. Study 2

An eye-tracking technique was employed to record the participants' cognitive focus. In a within-participant design,

Table 1
Products and their prices (RMB) in Study 2.

Order	Category	Product	Original price	Previous price	Current price
1	4	Treadmill	6000	5500	5200
2	1	Fitness equipment	600	520	570
3	4	Alarm clock	120	100	90
4	2	Jacket	1900	1700	1800
5	4	Memory card	65	60	55
6	3	Suitcase	1000	800	880
7	3	Electric kettle	600	520	540
8	1	Tea set	300	220	270
9	2	Red wine	360	300	330
10	4	MP3	280	250	220
11	2	Calcium tablet	300	240	270
12	1	Jeans	590	520	560
13	1	Dance pad	300	200	260
14	3	Soy milk maker	770	660	700
15	1	Headset	380	350	370
16	2	Electric fan	300	240	270
17	2	Humidifier	600	500	550
18	1	Water filter	640	560	610
19	4	Bicycle	2000	1900	1750
20	4	Computer	4500	4300	4200
21	1	Language course membership	1450	1200	1350
22	1	Racket	260	200	240
23	3	Business suit	2200	1500	1700
24	4	Bookshelf	90	80	70
25	3	Camping bag	370		
26	3	Backpack	350	250	290
27	4	Watch	5T3276942e-470		440
28	3	Air cleaner	450	350	390
29	3	Membership for fitness club	2000	1600	1750
30	2	Collagen protein	580	500	540
31	4	Food containers	80	70	65
32	3	Pillow	590	490	520
33	3	Printer	1500	1350	1400
34	2	Trolley case	750	650	700
35	4	Vacuum cleaner	440	390	
36	4	Egg boiler	190	180	160
37	3	Heater	590	500	530
38	2	Digital recorder	480	400	440
39	3	Charger	180	150	160
40	2	Wallet	2003276942e-140		170
41	4	Umbrella	90	80	70
42	1	Chair	300	220	270
43	2	Bread machine	600	500	550
44	4	Thermal mug	90	80	75
45	4	Facial cleanser	120	100	90
46	3	Thermal underwear	280	180	220
47	4	Down coat	1200	1050	900
48	4	Keyboard	120	110	100
49	2	Oven	1800	1400	1600
50	4	Shoe shelf	120	100	90
51	2	Polo shirt	600	520	560
52	3	Sportswear	480	400	430
53	2	Jumper	800	600	700
54	2	Water dispenser	480	400	440
55	4	Coat	1800	1650	1600
56	4	Clotheshorse	100	80	75
57	1	Mobile hard diskdrive	800	720	770
58	4	Pesticide	45	40	35
59	1	Membership for movie theater	600	480	550
60	1	Sports shoes	800	680	750
61	1	Sunglasses	5T3276942e-420		470
62	1	Storage container	260	220	250
63	4	Webcam	390	370	350
64	1	Pedometer	280	200	250
65	4	Coffeemaker	800	740	700
66	2	Mini fridge	900	760	830
67	4	Router	160	150	130
68	4	Loudspeaker	2000	1700	1600
69	4	Electronic dictionary	450	430	410
70	3	Digital	3400	2600	2900

Note: Products in Category 4 are filler stimuli whose current price < previous price < original price. In Categories 1, 2, and 3, previous price < current price < original price. In Category 1, (original price – current price) < (current price – previous price). In Category 2, (original price – current price) = (current price – previous price). In Category 3, (original price – current price) > (current price – previous price).

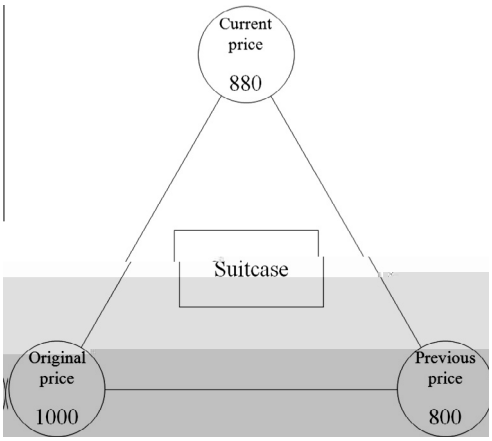

Fig. 1. Sample stimulus (Study 2).

We calculated the purchase rate of the experimental and filler products for each participant when acting as a personal decision maker and as an agent, respectively. A repeated-measures ANOVA was conducted on the purchase rate of the filler products with role as an independent variable. Results revealed no significant difference between the purchase rate for agents (= 79.7%, = 17.8%) and that for personal decision makers (= 76.5%, = 23.6%), (1, 39) = .94, = .34, η^2 = .02. Therefore, these filler products were left out in the following analyses.

Crucially, a similar repeated-measures ANOVA was conducted on the purchase rate of the experimental products with role as an independent variable. Consequently, agents (= 36.8%, = 24.2%) were more likely to purchase experimental products than personal decision makers (= 26.6%, = 22.4%), (1, 39) = 15.74, < .001, η^2 = .29, indicating that agents exhibited less inaction inertia than personal decision makers.

We defined non-overlapping visual areas of interest (AOI) around each piece of information (i.e., current price, previous missed price and original price). The stimulus is visually complex because each stimulus included both Chinese characters and digits. Hence, BeGaze was used to physically draw AOIs around the stimuli (drawing method). This approach allows for a large degree of flexibility when defining the shape and size of AOIs (Orquin, Ashby, & Clarke, 2016). As recommended by Holmqvist et al. (2011), the AOIs were defined as larger than the stimuli.

The total number of fixations on each AOI was calculated for each participant. Next, it was divided by the number of experimental stimuli (i.e., 45), reflecting the average number of fixations[1]. A 2 (role: personal decision maker or agent) × 2 (price: previous price or original price) repeated-measures ANOVA on the average number of fixations yielded a main effect for price, (1, 39) = 6.70, = .014, η^2 = .15. Participants fixed on the previous price (= 2.12, = 0.92) more than the original price (= 1.92, = 0.94). The main effect for role was insignificant, (1, 39) = 2.04, = .162, η^2 = .05. There was no difference between the fixations for personal decision makers (= 2.10, = 0.99) and agents (= 1.95, = 0.88). More importantly, an interaction between role and price was found (Fig. 2), (1, 39) = 7.70, = .008, η^2 = .17. Personal decision makers fixed on the previous price (= 2.24, = 0.98) more than the original price (= 1.96, = 0.99), (1, 39) = 14.30, < .001, η^2 = .27. However, there was no significant difference between the fixations on the previous price (= 2.00, = 0.86) and those on the original price (= 1.89, = 0.90) for agents, (1, 39) = 1.44, = .237, η^2 = .04. These results indicated that agents focused on gains more than losses relative to personal decision makers.

The total duration of fixations on each AOI was also calculated. Next, it was divided by the number of experimental stimuli (i.e., 45), reflecting the average duration of fixations[2]. A 2 (role: personal decision maker or agent) × 2 (price: previous price or original price) repeated-measures ANOVA on the average duration of fixations yielded insignificant main effects for both price ($_{\text{previous price}}$ = 625.49 ms, = 320.39, $_{\text{original price}}$ = 570.86 ms, = 320.16) and role ($_{\text{personal decision maker}}$ = 626.04 ms, = 326.07, $_{\text{agent}}$ = 570.31 ms, = 314.27), (1, 39) = 3.84, = .057, η^2 = .09 and (1, 39) = 1.98, = .168, η^2 = .05. We also observed an insignificant interaction between role and price, (1, 39) = 3.50, = .069, η^2 = .08.

[1] One-sample Kolmogorov–Smirnov tests revealed that the average number of fixations for the original and previous price in the conditions of personal decision maker and agent were normally distributed, s > .10.

[2] One-sample Kolmogorov–Smirnov tests revealed that the average duration of fixations for the original and previous price in the conditions of personal decision maker and agent were normally distributed, s > .10.

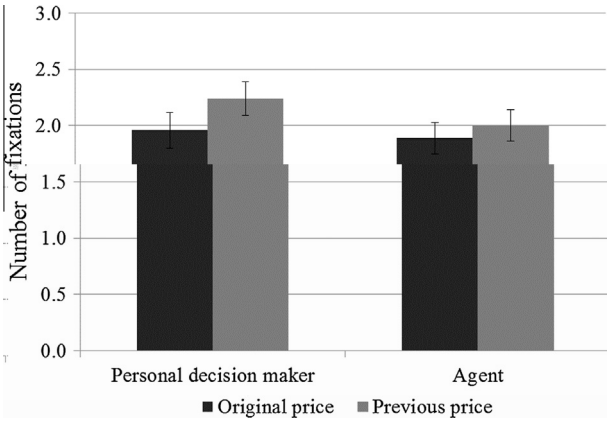

Fig. 2. Number of fixations as a function of role and price (Study 2). Note: The error bars indicate the standard errors of means.

Note that results of eye-tracking research may be influenced by AOI size (Orquin et al., 2016). Therefore, AOI size was changed to test whether our results were robust. We defined two non-overlapping AOIs around each piece of information based on their coordinates, with the size of a circle at 144 pixels in diameter (or with a 3.46° visual angle; script definition method). The results remained unchanged in general (Table 2).

We investigated whether fixations correlated with the purchase rate of the experimental products. Both the gaze number proportion and the gaze duration proportion of the original price was calculated (Ashby, Dickert, & Glöckner, 2012; Ashby, Walasek, & Glöckner, 2015):

$$\text{Gaze number proportion of the original price} = \frac{}{+}$$

$$\text{Gaze duration proportion of the original price} = \frac{}{+}$$

where denotes the average number of fixations on the original price, denotes the average number of fixations on the previous price, denotes the average duration of fixations on the original price, and denotes the average duration of fixations on the previous price.

Consequently, the gaze number proportion of the original price was positively correlated with the purchase rate of the experimental products for personal decision makers, = .40, = .011. Unexpectedly, the correlation was insignificant for agents, = .11, = .498. Similar results were obtained regarding the gaze duration proportion of the original price. It was positively correlated with the purchase rate for personal decision makers, = .36, = .024, but not for agents, = .12, = .451. The results based on AOIs that were defined by the script were shown in Table 2.

In summary, the findings in Study 2 demonstrated that agents exhibited less inaction inertia than personal decision makers. For a within-participant design, the results showed that even for the same decision maker, deciding for oneself differed from deciding for others. In addition, the eye-tracking data on number of fixations revealed differences between personal decision makers and agents in terms of cognitive focus during decision processes. Agents were more sensitive to gains than losses compared to personal decision makers.

The unexpected result that cognitive focus was not correlated with the purchase decision (at least in the agent condition) may have been caused by two reasons. First, although the fixations on the original or previous price did reflect a cognitive focus, they were also confounded with other factors in our design. For instance, a participant may have gazed at the original price because he or she was doing mental arithmetic, not because this price was important in determining the choice. Second, the binary choice task in this study was less sensitive to participants' preferences compared to a rating task. Those who had neutral attitudes toward a given product either chose to buy or not. Such insensitivity may lead to the insignificant correlation between cognitive focus and the purchase decision. Hence, Study 3 was designed to further explore whether cognitive differences were responsible for self–other differences regarding inaction inertia.

7. Study 3

The aim of Study 3 was as follows. First, we investigated the relationships among role, cognitive focus (measured by a self-reported item), and inaction inertia. Second, emotion may be another factor causing self–other differences in inaction inertia. Due to an empathy gap (Van Boven, Dunning, & Loewenstein, 2000), personal decision makers may be in a "hot"

Table 2
Results based on different AOIs in Study 2.

Dependent variable		Drawing method	Script definition
Number of fixations	Main effect for price	(1, 39) = 6.70 = .014 η^2 = .15	(1, 39) = 0.18 = .672 η^2 = .01
	Main effect for role	(1, 39) = 2.04 = .162 η^2 = .05	(1, 39) = 0.01 = .947 η^2 = .01
	Interaction	(1, 39) = 7.70 = .008 η^2 = .17	(1, 39) = 3.19 = .082 η^2 = .08
Duration of fixations	Main effect for price	(1, 39) = 3.84 = .057 η^2 = .09	(1, 39) = 0.02 = .881 η^2 = .01
	Main effect for role	(1, 39) = 1.98 = .168 η^2 = .05	(1, 39) = 0.03 = .873 η^2 = .01
	Interaction	(1, 39) = 3.50 = .069 η^2 = .08	(1, 39) = 4.12 = .049 η^2 = .10
Correlation between gaze number proportion and purchase decision	Personal decision maker	= .40 = .011	= −.05 = .756
	Agent	= .11 = .498	= .13 = .427
Correlation between gaze duration proportion and purchase decision	Personal decision maker	= .36 = .024	= −.03 = .861
	Agent	= .12 = .451	= −.12 = .467

state, whereas agents may be in a "cold" state when making choices. These affective states may influence how people react when facing an inferior opportunity. Therefore, affective states during decision processes were assessed to explore whether they account for self–other differences in inaction inertia. Third, a control condition where decision makers did not miss a superior opportunity (only the original price and the current price were provided) was introduced to test whether missing a superior opportunity actually decreased the likelihood of acting on an inferior opportunity for personal decision makers more than for agents.

A total of 133 undergraduates (23 men, 110 women; $_{age}$ = 19.58 years) participated in the study in exchange for course credit. They were randomly assigned to one condition in a 2 (role: personal decision maker or agent) × 2 (condition: experimental or control) between-participant design.

As in Study 1, personal decision makers described the self, whereas agents described a friend. Next, in the experimental condition, a scenario in which participants (the friends who had been described) were planning to buy a shirt was presented. The original price of the shirt was 318 RMB. It had been on sale last week at a price of 188 RBM (40% off). However, the participants (the friends) missed the opportunity. The current price was 248 RMB (20% off).

Before making decisions, participants indicated their cognitive focus ("During my decision processes, I focus more on ..." 1 = , 9 =). A higher score indicated a greater focus on losses. Next, they rated their affective states (i.e., distressed, excited, jittery, afraid, joyful, regretful, anxious, and worried) during their decision processes on a 5-point scale from 1 ( ) to 5 ( ).

In the control condition, a scenario showed that the participants (or the friends who had been described) were planning to buy a shirt. The original price of the shirt was 318 RMB. The current price was 248 RMB (20% off). Note that the participants in the control condition were not informed of the price in the last week. Therefore, they did not indicate their cognitive focus, only rating their affective states.

Afterward, the participants in all conditions indicated their role in the decision problem as a manipulation check. The personal decision makers rated the probability of buying the shirt at the current price on a 9-point scale from 1 ( ) to 9 ( ). Using the same scale, the agents indicated the probability of recommending that their friends buy the shirt.

Next, participants rated their regret, effort exerted for the task, difficulty of this task and perceived responsibility, as in Study 1. Finally, the demographic information (i.e., gender, age, and monthly consumption) was collected, and the participants were thanked and debriefed.

Four participants who failed the manipulation check were excluded. The personal decision makers and agents did not differ regarding the ratings of regret, effort, task difficulty, responsibility, gender, age, or monthly consumption, $s > .10$. However, the personal decision makers (= 6.88, = 1.71) perceived more responsibility for the outcome than agents did (= 6.10, = 1.75), (1, 127) = 6.61, = .011, $\eta^2 = .05$.

A 2 (role) × 2 (condition) ANOVA on probability revealed a significant effect for the condition, (1, 125) = 3.93, = .050, $\eta^2 = .03$. The probability was higher in the control condition (= 6.49, = 2.19) than in the experimental condition (= 5.74, = 2.09). The main effect for role was insignificant ($_{\text{personal decision maker}}$ = 5.77, = 2.31; $_{\text{agent}}$ = 6.41, = 1.96), (1, 125) = 2.22, = .138, $\eta^2 = .02$.

Crucially, a significant interaction between role and condition was detected (Fig. 3), (1, 125) = 9.19, = .003, $\eta^2 = .07$. Missing a superior opportunity significantly decreased the purchase probability for personal decision makers ($_{\text{experimental}}$ = 4.94, = 2.31; $_{\text{control}}$ = 6.77, = 1.91), (1, 64) = 11.94, < .001, $\eta^2 = .16$, whereas it did not influence agents' decisions ($_{\text{experimental}}$ = 6.59, = 1.44; $_{\text{control}}$ = 6.21, = 2.46), (1, 61) = 0.59, = .447, $\eta^2 = .01$. Furthermore, the probability rating was higher for agents than for personal decision makers in the experimental condition, (1, 68) = 12.64, < .001, $\eta^2 = .16$. However, there was no difference in the control condition, (1, 57) = 0.96, = .331, $\eta^2 = .02$. These results demonstrated inaction inertia for personal decision makers but no inaction inertia for agents. Including responsibility as a covariate did not change the results.

To test whether cognitive focus was determined by role, we compared personal decision makers to agents in the experimental condition[3]. An ANOVA on cognitive focus with role as the independent variable suggested that agents (= 6.68, = 2.10) focused less on losses than personal decision makers (= 7.58, = 1.80), (1, 68) = 3.79, = .056, $\eta^2 = .05$. Including responsibility as a covariate did not change the results.

To test whether the role influenced affect states, we also compared personal decision makers to agents in the experimental condition[4]. ANOVAs on the 8 emotion items with role as the independent variable showed that personal decisions makers (= 2.72, = 1.26) felt more regretful than agents (= 1.65, = 0.85), (1, 68) = 17.40, < .001, $\eta^2 = .20$. No significant difference emerged in terms of other items, $s > .10$. Including responsibility as a covariate did not change the results.

Furthermore, both the average ratings of negative emotions (i.e., distressed, jittery, afraid, regretful, anxious, and worried) and positive emotions (i.e., excited and joyful) were computed. ANOVAs on the average ratings with role as the independent variable revealed that personal decisions makers (= 2.19, = 0.86) experienced more intense negative emotions than agents (= 1.79, = 0.73), (1, 68) = 4.22, = .044, $\eta^2 = .06$. No significant difference emerged in the average rating of positive emotions, > .35. Including responsibility as a covariate did not change the results.

We focused on cognitive focus, regret, and negative emotion, respectively, to explore the factor(s) that mediated the effect of role on purchase decisions. Following the procedure proposed by Preacher and Hayes (2008), the role served as the independent variable, the cognitive focus served as a potential mediator, and the probability served as the dependent variable. On the basis of 5000 bootstrap samples, the analysis revealed a significant indirect effect for cognitive focus (95% CI [0.01, 0.14]). As predicted, the role of agent decreased the focus on losses, which subsequently diminished inaction inertia (Fig. 4). It is noteworthy that the direct effect of role on probability was still significant when cognitive focus was included in the model. Therefore, cognitive focus played a partial mediation role in the relationship between role and probability. Including responsibility as a covariate did not change the results.

The same steps were repeated for regret (95% CI [−0.02, 0.24]) and negative emotion (95% CI [−0.07, 0.06]), respectively. Both intervals included zero, indicating that neither mediated the effect of role on purchase probability. Including responsibility as a covariate did not change the results.

In summary, the findings in Study 3 indicated that agents showed less inaction inertia than personal decision makers because they focused more on gains and less on losses relative to personal decision makers.

8. Study 4

In this study, the cognitive focus was manipulated. Participants were explicitly asked to focus either on gains or losses. In the third condition, no explicit requirement was imposed. If the cognitive focus did account for the self–other difference in

[3] The participants in the control condition did not rate their cognitive focus, therefore, they were excluded in the analysis.

[4] Because the participants in the control condition were not informed of the missed discounted price in the last week, it was possible that they did not feel distressed, jittery, afraid, regretful, anxious, or worried as the participants in the experimental condition did. Therefore, only those in the experimental condition were included in the analysis.

inaction inertia, both personal decision makers and agents would show less inaction inertia when they focused on gains than when they focused on losses.

Participants were 232 adults (134 men, 86 women, 12 unreported; $_{age}$ = 23.97 years). They were randomly assigned to one condition in a 2 (role: personal decision maker or agent) × 3 (cognitive focus: gain, loss, or control) between-participant design.

In the personal decision maker condition, a scenario was presented where participants were planning to travel in the near future. An advertisement from a travel agency offered a two-day tour to a nearby suburb; the original price was 599 RMB but was now reduced to 299 RMB. Unfortunately, the participants missed the opportunity. The present price was 449 RMB. In the agent condition, the participants wrote down the surname of a best friend. The protagonist in the scenario was the best friend who asked for their advice.

Thereafter, the participants in the gain-focused condition were asked to calculate how much lower the current price was compared to the original price, whereas participants in the loss-focused condition were asked to calculate how much higher the current price was compared to the missed price. Those in the control condition were not asked this question. Next, personal decision makers indicated the probability of signing up for the tour at the current price on a 9-point scale from 1 ( ) to 9 ( ). Agents indicated the probability of recommending that their best friends sign up for the tour. Participants then rated the difficulty of this task and the perceived responsibility. Finally, demographic information (i.e., gender, age, and monthly consumption) was collected, and the participants were thanked and debriefed.

No significant differences emerged between six experimental conditions with regard to any of the control variables, s > .05. A 2 (role) × 3 (cognitive focus) ANOVA was conducted on probability. The main effect for role and the interaction between role and cognitive focus were insignificant, (1, 226) = 1.76, = .186, η^2 = .01 and (2, 226) = 1.67, = .191, η^2 = .02, respectively. However, a main effect for cognitive focus was detected, (2, 226) = 5.18, = .006, η^2 = .04 (Fig. 5). LSD post hoc tests revealed that the probability was higher in the gain condition (= 5.01, = 2.06) than in the loss condition (= 4.03, = 1.72), = .99, = .001. Neither the difference between the gain and control (= 4.50, = 1.94) groups nor the difference between the loss and control groups was significant, s > .05.

To summarize, Study 4 showed that manipulating the cognitive focus influenced the probability of seizing the current opportunity. Specifically, focusing on gains caused less inaction inertia than focusing on losses, regardless of the decision makers' role. These results indicated that cognitive focus can interpret why decision makers' role would affect the level of inaction inertia.

9. General discussion

The prevalence of inaction inertia prevents individuals from seizing current opportunities. However, the present research

In the current research, we propose a new mechanism, namely cognitive focus, to interpret the inaction inertia effect. This explanation focuses on how individuals view the current inferior opportunity. Losses are reflected in the link between the current opportunity and missed opportunity, whereas gains are reflected in the link between the current opportunity and the original state. Inaction inertia emerges because of a tendency to weigh losses more than gains (Kahneman & Tversky, 1979; Ledgerwood & Boydstun, 2014). However, we do not deny the roles of regret and devaluation in the inaction inertia effect. It is possible that different explanations are valid in different situations. Future research may well determine the boundary conditions for each explanation.

As for the self–other differences in inaction inertia, the analysis in Study 3 reveals that the cognitive focus plays a partial mediation role in the relationship between decision maker's role and purchase probability. It also suggests that other mediators exist, calling for researchers' attention.

As an irrational decision bias, inaction inertia has attracted attention in recent years. Researchers are concerned with how this bias can be reduced. Personality traits such as indecisiveness are demonstrated as being correlated with inaction (Germeijs & De Boeck, 2002; Patalano & Wengrovitz, 2007). However, contexts are more readily changed than traits. Contextual factors, including the source of opportunity (Butler & Highhouse, 2000) and the number of alternatives (van Putten, Zeelenberg, & van Dijk, 2007), can diminish inaction inertia as well.

Our research suggests two feasible methods to reduce inaction inertia. First, seeking advice may increase the tendency to

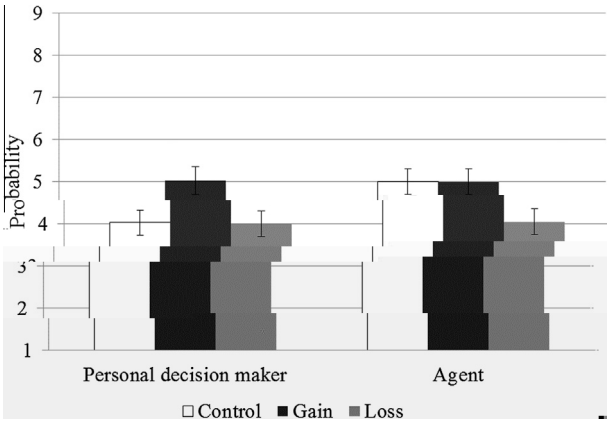

Fig. 5. Probability as a function of role and cognitive focus (Study 4). Note: Probability refers to the likelihood that personal decision makers sign up for the tour at the current price or the likelihood that agents recommend their friends to sign up for the tour. The error bars indicate the standard errors of means.

current price of 450 RMB?" 1 = , 5 = , 9 =). The results showed no difference between the two conditions, > .85, which ruled out the competing explanation. In conclusion, the presence of the self–other difference in the inaction inertia effect originates from a cognitive focus on gains or losses.

It should be noted that the level of the inaction inertia effect may be influenced by whether individuals want a product. In our opinion, the observed self–other difference may become smaller or even disappear when consumers truly want or do not want a given product. As such, we believe that there is much to be gained by investigating the role of incentives in the self–other difference regarding inaction inertia.

In addition, although we measured affective states during decision processes, their effects call for further examination. For example, the emotional arousal reflected in Galvanic skin responses should be recorded. Moreover, empathy may moderate the magnitude of self–other differences regarding inaction inertia. Agents with high levels of empathy may make similar decisions as personal decision makers. In contrast, those with low levels of empathy may make choices that are different from personal decision makers. To conclude, future research may well shed light on the role of affective state.

Sales promotion is a widely employed method to attract consumers as well as increase sales. In the United States, Black Friday marks the beginning of the Christmas shopping season. Similarly, November 11th is the busiest shopping day in China, in which stores provide an exaggerated offering of deals and encourage consumers to enter into a buying craze. December 12th is another sales promotion day—after the first sales promotion (e.g., November 11th), sellers may possess sufficient storage capacity and may be keen to seize the next promotion opportunity (e.g., December 12th) to attain greater sales.

However, in most cases, the first day of a shopping season (e.g., Black Friday) or the previous sale promotion (e.g., November 11th) offers better deals than other days or a later sales promotion day (e.g., December 12th). For example, if a product was labeled at $20 on Black Friday but its original price was $50, it would be sold for between $20 and $50 (e.g., $30) on the other days of the Christmas season.

Because of inaction inertia, consumers are less likely to purchase products that they missed during previous sales promotions, causing lower sales. Therefore, sellers should recognize the presence of inaction inertia. However, the situation is not so dire. Our findings offer suggestions to shops, especially online stores, to encourage consumers to buy more products even they have acknowledged that the best discount opportunity had passed. Sellers should utilize the self–other difference in inaction inertia. For instance, online stores could provide a service for consumers to share product information with friends via Facebook or other social networks to ask friends for advice. The advice from friends may eventually promote the sales. Moreover, the current findings show that listening to a friend's advice may help consumers who often struggle with making decisions after having missed the best opportunity; in such a case, agents can seize the next opportunity.

References

Arkes, H. R., Kung, Y.-H., & Hutzel, L. (2002). Regret, valuation, and inaction inertia. , 371–385.
Ashby, N. J., Dickert, S., & Glöckner, A. (2012). Focusing on what you own: Biased information uptake due to ownership. , 254–267.

Ashby, N. J., Walasek, L., & Glöckner, A. (2015). The effect of consumer ratings and attentional allocation on product valuations. , 172–184.
Beisswanger, A. H., Stone, E. R., Hupp, J. M., & Allgaier, L. (2003). Risk taking in relationships: Differences in deciding for oneself versus for a friend. , 121–135.
Butler, A., & Highhouse, S. (2000). Deciding to sell: The effect of prior inaction and offer source. , 223–232.
Eyal, T., Liberman, N., & Trope, Y. (2004). The pros and cons of temporally near and distant action. , 781–795.
Friling, T. H., Vincent, L. H., & Henard, D. H. (2014). When to accentuate the positive: Re-examining valence effects in attribute framing. , 95–109.
Germeijs, V., & De Boeck, P. (2002). A measurement scale for indecisiveness and its relationship to career indecision and other types of indecision. , 113–122.
Grossmann, I., & Kross, E. (2014). Exploring Solomon's paradox: Self-distancing eliminates the self–other asymmetry in wise reasoning about close relationships in younger and older adults. , 1571–1580.
Holmqvist, K., Nyström, M., Andersson, R., Dewhurst, R., Jarodzka, H., & Van de Weijer, J. (2011). . New York: Oxford University Press.
Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. , 263–292.
Kross, E., & Grossmann, I. (2012). Boosting wisdom: Distance from the self enhances wise reasoning, attitudes, and behavior. , 43–48.
Kumar, P. (2004). The effects of social comparison on inaction inertia. , 175–185.
Ledgerwood, A., & Boydstun, A. E. (2014). Sticky prospect: Loss frames are cognitively stickier than gain frames. , 376–385.
Lu, J., & Xie, X. (2014). To change or not to change: A matter of decision maker's role. , 47–55.
Lu, J., Xie, X., & Xu, J. (2013). Desirability or feasibility: Self-other decision-making difference. , 144–155.
Orquin, J., Ashby, N. J. S., & Clarke, A. D. F. (2016). Areas of interest as a signal detection problem in behavioral eye-tracking research. . http://dx.doi.org/10.1002/bdm.1867.
Patalano, A. L., & Wengrovitz, S. M. (2007). Indecisiveness and response to risk in deciding when to decide. , 405–424.
Pennington, G. I., & Roese, N. J. (2003). Regulatory focus and temporal distance. , 563–576.
Polman, E. (2012a). Effects of self-other decision making on regulatory focus and choice overload. , 980–993.
Polman, E. (2012b). Self-other decision making and loss aversion. , 141–150.
Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. , 879–891.
Trope, Y., & Liberman, N. (2010). Construal level theory of psychological distance. , 440–463.
Tykocinski, O. E., & Pittman, T. S. (1998). The consequences of doing nothing: Inaction inertia as avoidance of anticipated counterfactual regret. , 607–616.
Tykocinski, O. E., & Pittman, T. S. (2001). Product aversion following a missed opportunity: Price contrast or avoidance of anticipated regret. , 149–156.
Tykocinski, O. E., Pittman, T. S., & Tuttle, E. E. (1995). Inaction inertia: Foregoing future benefits as a result of an initial failure to act. , 793–803.
Van Boven, L., Dunning, D., & Loewenstein, G. (2000). Egocentric empathy gaps between owners and buyers: Misperceptions of the endowment effect. , 66–76.
van Putten, M., Zeelenberg, M., & van Dijk, E. (2007). Decoupling the past from the present attenuates inaction inertia. , 65–79.
van Putten, M., Zeelenberg, M., & van Dijk, E. (2009). Dealing with missed opportunities: Action vs. state orientation moderates inaction inertia. , 808–815.
van Putten, M., Zeelenberg, M., & van Dijk, E. (2013). How consumers deal with missed discounts: Transaction decoupling, action orientation and inaction inertia. , 104–110.
White, K., MacDonnell, R., & Dahl, D. W. (2011). It's the mind-set that matters: The role of construal level and message framing in influencing consumer efficacy and conservation behaviors. , 472–485.
Zeelenberg, M., Nijstad, B. A., van Putten, M., & van Dijk, E. (2006). Inaction inertia, regret, and valuation: A closer look. , 89–104.