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Does Decision-Making Speed Depend on Non-interactive Others?

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This study examined the influence that the mere presence of others (i.e., non-interactive) has on the decision-making speed of individuals. The study compared four conditions: a participant executing a given task by himself or herself, or with another person next to him or her and executing the same task either quickly, at a normal speed, or at a slow speed. The results of these comparisons showed that when the other person made decisions quickly, a participant's decision-making sped up to align with that of the other person. Interestingly, even when a participant's decision-making speed was accelerated under the influence of the other person's decision-making speed, there appeared to be no difference in the participant's degree of satisfaction with the results, compared to when making decisions at his or her own pace. Furthermore, the study results showed that the physical presence of another person was essential to transmitting decision-making speed: transmission did not occur after attempts were made to manipulate speed solely through the use of artificial sound.

Keywords: decision-making speed, speed transmission, non-interactive others

Introduction

Can we ever truly act as if the presence of another person were not there? When we see a crowd and wonder what's on the other side, or when we're waiting in line at the cashier and see a person buying a shirt of a color different from the one we're holding, and we start to worry that maybe the other one is better. After all, these scenarios all indicate that we are influenced by other people. Moreover, they indicate that we are even influenced by people with whom we are not interacting. In this decade, interest is starting to coalesce with regards to the influence that such non-interactive people have on the behavior of consumers. Several studies have been published, especially in journals such as the *Journal of Consumer Research*. Their main focal point is the "audience effect" that the presence of others has (e.g., Argo, Dahl, & Manchanda, 2005; White & Dahl, 2006). For example, it has been demonstrated that consumers behave in ways to make themselves look better when another person is present when they are purchasing or selecting something, and that the presence of others can create feelings of tension or stress.

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In the current study, we focus not on an "audience," but on the presence of others as "co-actors", in other words, people who are engaged in the same task, but not interacting with oneself. These people can include, for example, other customers doing the same actions as oneself when choosing from a restaurant menu, or looking for and purchasing shoes at a shoe store. We shed light on the influence that others have as co-actors on an individual's decision-making speed. Regarding the effect on decision-making results, the fact that multiple people other than oneself can choose item A and thus prompt oneself also to choose A is well-known as the "conformity effect" (Asch, 1956); nonetheless, the effect on the process such as decision-making speed, has not been clarified. Therefore, through the results of experiments, we demonstrate the effect that the presence or absence of another person, and the speed (i.e., fast or slow) of that other person's decision-making, has on the individual's own decision-making speed. The study also examines how an individual's degree of satisfaction with his or her overall decision-making changes under each condition. This perhaps explains the effect that the mere presence of others has on consumer decision-making speed, and reveals the relationship between decision-making speed and the degree of satisfaction with decision-making; in this way, this study's findings can have some implications for customer service work or customer service management, and for other settings in which non-interactive people happen to be present when consumers are making purchases.

Overview of Previous Research

Aforementioned, we cannot find any study which reveals the influence of others on the decision-making speed of individuals. Therefore some related researches focus on the influence of non-interactive others in consumer behavior and social psychology. Argo and her colleague did several studies on the influence of others (Argo, Dahl, & Manchanda, 2001; 2005; Argo, Dahl, & Morales, 2006; 2008; Argo & Main, 2008; Argo, Kurt, & Inman, 2011). Argo et al. (2005) by undertaking an experiment, explain the influence of the mere presence of others in shops on consumer brand selection, self-exhibitive behavior, and emotions. The result showed that when there was someone in the store at a close distance from the participant (i.e., two feet away), there was a tendency to buy more expensive products. Furthermore, the prevalence of exploratory behavior before purchasing decreased greatly if another person was present. White and Dahl (2006) tested the disparity in selection that occurs when one is alone, versus when another person present, using a scenario model test. Male participants were presented with the scenario of ordering room service at a hotel, and asked to choose between the "Ladies' Cut" and the "House Cut" on the steak menu. When alone, 35% of participants chose the former, which for social reasons could easily have negative connotations; when the scenario was read to them as having another person in the room, however, only 15% of participants made that choice. This is a significant difference. Moreover, these results were more pronounced among highly self-conscious people. In the same way, Argo et al. (2001) tested the influence that the presence of others has on feelings of shame, in an experiment where university students buy condoms. Those for whom the product itself prompted feelings of shame, the presence of others (both when actually nearby and when the subject could reasonably expect others to come into sight), and those feelings were further exacerbated; it was found that there was the possibility of purchase inhibition. These three studies found that presence of others, even it was in a scenario, influenced individuals' choice and behavior.

In social psychology field, there had been much effort to reveal the influence of the individuals on each other's behaviors. The "social facilitation" is the fundamental form of inter-individual influence. Triplette (1898), who is said to have created the prototype for social facilitation theory, discovered from bicycle race track records that rather than try to achieve better times on one's own, it was better to set a pace based on a

record set by oneself or someone else, and, moreover, it was even easier to set new records in a race with another person. Triplette linked that finding to that of an experiment involving the reeling of a fishing reel. In that experiment, where participants were to reel in the fishing reel as quickly as possible, it was confirmed that the presence of others had the social facilitation effect of increasing the reeling speed of the participants.

Allport (1920), who focuses on the presence of others and the number of tasks completed, compared the number of tasks (i.e., word-association tasks and opinion-producing tasks) completed by participants when alone and when in groups, and demonstrated that the results were better when the tasks were done in a group. This phenomenon is the "social facilitation", and the effect of having another person present and doing the same task in particular is called the "coaction effect" (Zajonc, 1965). Hunt and Hillery (1973) demonstrated that social facilitation depends on the nature of the task, and that for general, simple tasks, execution is facilitated when others are present; however, they discovered that when the task is complicated, others' presence rather inhibits execution. This is called "social inhibition". Markus (1978) and Schmitt, Gilovich, Goore, and Joseph (1986) confirm that even the mere presence of others facilitates or inhibits execution in the same way as being evaluated. Additionally, there is also the theory that if others are present, the attention is diverted in that direction, and a conflict arises between the attention to the task, and the level of arousal rises (i.e., in line with distraction conflict theory) (Baron, 1986; Groff, Baron, & Moore, 1983). On this point, Zajonc (1965) and Chapman (1974) also mentioned that the mere presence of others increases the level of arousal, and emphasizes the drive to action. Thus, in such situations it is easy for people to provoke a strong response; they explain that a positive response (facilitation) is more likely for tasks at which we are skilled, and a negative response (inhibition) is more likely for tasks at which we are not skilled. It makes sense to say that, in reality, the presence of others facilitates or inhibits the behavior of an individual.

Study 1

Hypothesis: The Transmission of Decision-Making Speed

As outlined in the previous section, it has been suggested that the presence of others has an effect on consumers' conscious choices, as well as on their subconscious behavior. Although studies were carried out in the field of consumer behavior, for example, those of which from Argo et al. (2005), White and Dahl (2006), and Dahl et al. (2001), have focused on the presence of others; what has been made clear is the audience effect. In other words, what has been clarified is the relationship to behavior: in the presence of others, consumers tend to buy expensive products to make themselves look good, and avoid choosing brands that carry a negative image. However, in this field, studies have not yet been done on the influence of co-actors. Therefore, in this study, we take an experimental psychology approach to test whether or not the decision-making speed of others is transmitted, in a setting in which a co-actor next to the participant performs the same decision-making task as the participant.

As mentioned, Triplette (1898) confirmed the social facilitation effect in the presence of others, and that it can be brought about by increasing the speed of task completion; he did so by examining bicycle racing records and undertaking a fishing rod reeling experiment. Watanabe (2008) demonstrated that speed was transmitted, through an experiment that used a biological motion stimulus. In that experiment, biological motion from 12 dots created the overall sensation that a person seemed to be moving, even if just one independent point was involved; to the observer, the speed of the dot's movement is perceived as the speed at which a person is moving. After being exposed to this stimulus, participants completed the simple task of pressing a computer key as quickly and correctly as possible when part of a line segment of a fixation point cross went out. The

results of the experiment showed that there was a negative correlation between the speed of the stimulus and the response time. In other words, when the speed of the visual stimulus seen before the task execution was fast, the task response times were shorter, and when the stimulus speed was slow, the response times were longer. Integrating this information, we put forth the following hypotheses:

H1: The decision-making speed of the other person will be transmitted. When the other person's decision-making is fast, the participant's (i.e., the concerned person's) decision-making speed will increase accordingly; and when the other person's decision-making speed is slow, the participant's decision-making speed will also slow down accordingly.

Hypothesis: The Degree of Satisfaction With Decision-Making

Satisfaction is not merely a result of selection; it is also crucial to the process. According to a study by Argo et al. (2005), consumers' pleasant or unpleasant feelings were influenced by the presence of others at the store's point of sale. It would seem that such emotional changes, apart from satisfaction with the utility brought about by the product itself, influence the satisfaction with the decision-making process. Argo et al. (2005) thought that negative feelings would increase as the number of other people grew, but the results of the experiment were that even at a close range, subjects had fewer negative feelings if there were one other person present, compared even to when they were shopping alone.

B. P. Kinard, M. L. Capella, and J. L. Kinard (2009) point out that due to the presence of others, consumers feel pressure or stress, and hence hesitate to use automated checkouts in retail stores. They undertook analysis that involved one of three conditions: there is no one in the automated checkout vicinity, one person in the vicinity, or three people in the vicinity. The results showed that the participants felt the most pressure when there was one other person nearby, and based on that experience, they were less likely to be inclined to use that checkout in the future.

In the co-action scenario that is the subject of this study, it is difficult to suppose the sensation of being watched by someone, but as is advocated in the distraction-conflict theory, perhaps the attention will be diverted to the other person, causing conflict between the attention and the task; under such circumstances, there is the potential for tension to increase. In this kind of situation, it is expected that satisfaction toward the task execution process will be lowered. Thus, it is conceivable that this tendency will be more strongly apparent when awareness of the other person is stronger.

H2: Compared to being alone, the degree of satisfaction with decision-making will be lower when another person is present.

H3: The greater the participant's awareness of the other person, the lower the degree of satisfaction with decision-making will be.

Methods

Experiment participants were 120 university students with no knowledge of the objectives of this study (58 men, 62 women; average age 20.80 years). They were randomly assigned to four conditions (no-confederate, confederate with fast speed, confederate with normal speed, and confederate with slow speed) between subjects design.

Stimuli

The 18 pairs of images of product brands service brands installed as stimuli were selected based on the pretest in which participants were asked brands' awareness and favorability. The 18 pairs are comprised of

three different types of combinations: Positive-Positive pairs (hereinafter called P-P pairs), Positive-Neutral pairs (P-N pairs), and Neutral-Neutral pairs (N-N pairs) in terms of favorability score. They were measured by 6-point Likert scale and we defined their score above 5.00 as positive, while those between 3.00 and 5.00 as neutral. This processing was done to create pairs whose favorability bias was striking (P-P pairs) and pairs that rivaled in terms of favorability (N-N pairs and N-P pairs).

The image pairs were displayed in the center of a 19-inch laptop computer screen, and they were lined up side-by-side. The size of each image was about 17.8 cm (width) × 13.3 cm (height), with color displayed on a gray background. The distance from the center of the screen to the closest edge of the image was about 1.7 cm. Each participant's visual distance was about 40 cm.

Procedure

Excluding those who participated in the no-confederate condition, participants took part in the experiment in pairs. However, one member of each pair was an experiment assistant (i.e., confederate). In all pairs, the participant and the confederate were of the same gender. The participant and confederate sat down in a quiet classroom in front of laptop computers of the same model, which had been placed next to each other ahead of time. The distance between the subject and the confederate was about 1.5 m. The task was to select the preferred image from images lined up and exhibited on the screen, and to click on that image. In this experiment, the time was measured from when the image pair was shown until the participant clicked an image. However, participants were told that there was no time limit, and that they had no need to rush to make a choice. When the participant clicked an image, immediately thereafter, a 400-Hz beeping noise was emitted for 500 ms, and the image pair disappeared from the screen. The beep sound was set at a volume that could be heard by the other persons, and the two laptops made the same sound. Next, there was a 1,000-ms pause, and the next image pair was shown. This time, the mouse cursor was automatically returned to the center of the screen. The participant repeated the above task, for a total of 18 runs. The display order and left-right arrangement of the image pairs were random for each participant. When the participant completed the final run, a 400-Hz beep sounded for 1,000 ms. This was set as a signal to convey to the participant the confederate's pace or the completion of the task.

Finally, the participants were asked two questions: "How satisfied are you with the selections you made just now?" (degree of satisfaction), and "How aware were you of the progress (speed) of the person next to you?" (awareness of others). For the question about degree of satisfaction, there were the following five choices of response—"5: very satisfied", "4: somewhat satisfied", "3: neither satisfied nor dissatisfied", "2: somewhat dissatisfied", and "1: very dissatisfied". The response options for the question about awareness of others were "5: very aware", "4: somewhat aware", "3: neither aware nor unaware", "2: not much aware", and "1: not aware at all".

Participants in the no-confederate condition (N = 30) completed the above task on their own. By completing this condition first, we were able to determine the baseline speed condition to be used in the study. Participants in the normal condition (N = 30), as described above, completed the task while paired with a confederate. However, the confederate's laptop computer was controlled by a program that beeped automatically, in line with the average time (baseline) measured in the no-confederate condition for each image pair, and the screen changed automatically. As such, the confederate acted as if he or she were completing the task at the same speed as those in the no-confederate condition. Fast-condition participants (N = 30) completed

the experiment in pairs, just as with the normal condition. However, the confederate's laptop computer was set to beep and change screens 2,000 ms faster than the no-confederate condition measured at baseline. The confederate acted as if he or she were completing the task faster than the no-confederate condition. Slow-condition participants (N = 30) also completed the experiment in pairs. However, the confederate's laptop computer was set to beep and change screens 2,000 ms slower than the no-confederate condition measured at baseline. The confederate acted as if he or she were completing the task more slowly than the no-confederate condition.

Results

The average time that each participant spent on each image pair was calculated, as was the average response time per pair for all participants. By analyzing variance in the one factor and four levels, we found that the principal effect of the conditions was significant ($F(3,116) = 8.91$, $p < 0.01$). The result of a multiple comparison (Turkey method) showed that the response times under the fast condition were significantly shorter than the response times for all other conditions ($p < 0.05$). (The average response times for all conditions are shown in Figure 1). In other words, the results indicated that the decision-making speed was indeed being transmitted. However, no transmission of decision-making speed was seen for the slow condition, thus showing that alignment only occurred when the other's decision-making speed was fast. Therefore, these findings only partially support the hypothesis.

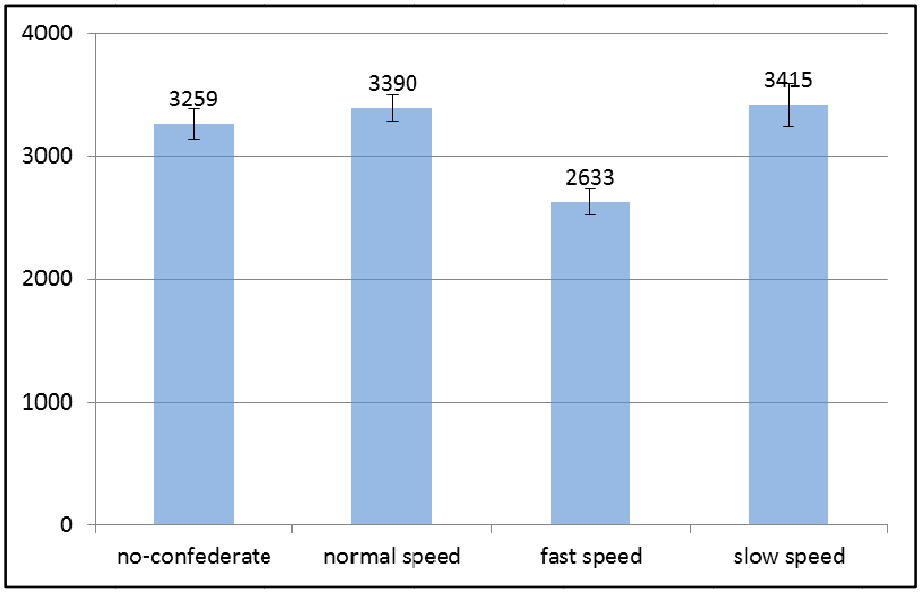

Figure 1. Response times (ms) for each condition. *Note.* *Bars show standard margin of error.

Next, we examined the effect on the level of difficulty of making a selection. Based on the average response times of each image pair in the no-confederate condition, we analyzed the results in Figure 1 divided into the image pairs where not much time was spent in making a decision (i.e., nine pairs that were easy to choose, or "easy-to-choose pairs") and image pairs that did require some selection time (i.e., nine "difficult-to-choose pairs"). An analysis of variance was performed on each set of data, and the results showed the principal effect for both the former image pairs ($F(3,116) = 3.78$, $p < 0.05$) and the latter image pairs ($F(3,116) = 4.49$, $p < 0.01$). A multiple comparison was performed (Turkey test), and the results were that for

easy-to-choose pairs, the response times under the fast condition were significantly shorter than those for the normal or slow conditions ($p < 0.05$). For difficult-to-choose pairs as well, it was shown that the response times for the fast condition were significantly shorter than those for all other conditions ($p < 0.05$). Therefore, these findings confirmed that, however whether the image pair was difficult to choose, the decision-making generally aligned with the other's fast pace (Figure 2).

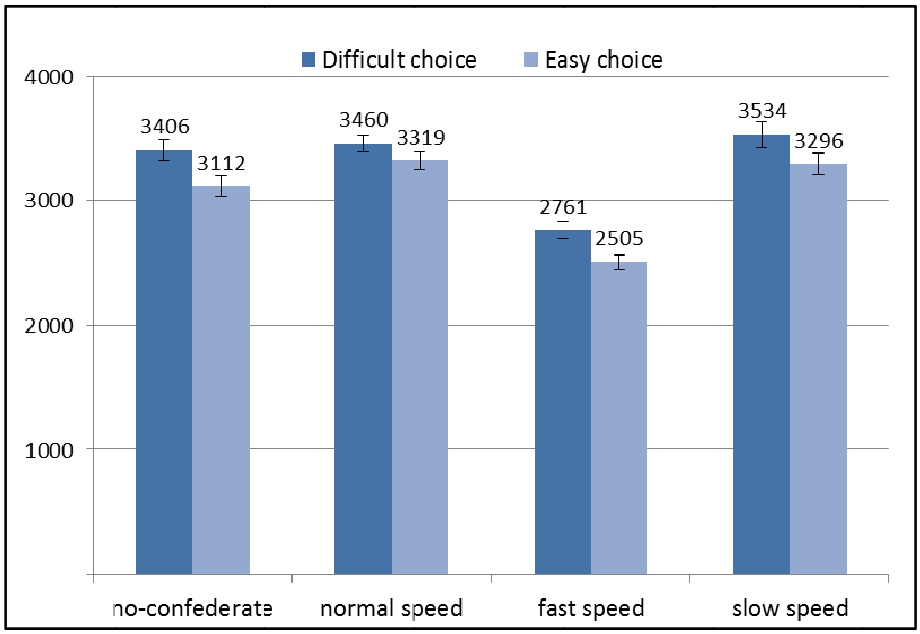

Figure 2. Response times (ms) by task difficulty. *Note.* *Bars show standard margin of error.

At what point does this speed transmission occur? To see the timing among the 18 trials, we note that the observed conformity appeared in the fast condition, and we calculated the average response times for each run (Figure 3). Looking at the figure, the conformity under the fast condition is already obvious by the second run. An analysis of variance for two factors that are conditions × trials showed that both the principal effect of the conditions ($F(3,116) = 7.61$, $p < 0.01$) and the principal effect of the trials ($F(17,1972) = 4.92$, $p < 0.01$) were significant, and there was no interaction between the factors ($F(51,1972) = 0.58$, n.s.). Therefore, the transmission of higher speeds in decision-making did not occur gradually as the trials progressed, nor did they happen after the other person finished the task; rather, they happened immediately after participants noticed just one instance of a higher speed from the other person.

Next, correlation analysis was performed of awareness of others and of response times. There was a weak negative correlation between them in the fast condition ($r = -0.09$, $p < 0.05$), but this correlation was not significant in the slow condition. In the fast condition, the more aware the participant was of the presence of the other person, the more readily the other's speed was transmitted. Incidentally, while confirming variations in the degree of awareness by condition, a significant value was observed ($F(2,87) = 3.36$, $p < 0.05$). The average value of awareness of the other person was 3.43 (SE = 0.21) in the fast condition, 2.80 (SE = 0.17) in the normal condition, and 2.77 (SE = 0.22) in the slow condition. The results of a multiple comparison (Turkey test) showed that there was a tendency to be significant between the fast and slow conditions ($p = 0.061$).

Furthermore, considering the influence of others and the shortening of the decision-making time, we reviewed the consistency of the selection results in the normal and fast conditions, to examine whether the

selections changed. Specifically, for both conditions, when analyzing the correlation rate between choosing one item (X) from an image pair (X-Y) and the coefficient (r = 0.40), there was a significant trend at 10% level. That is to say, even if the decision-making speed aligned with the speed of the other person, there was not much change in the selection results.

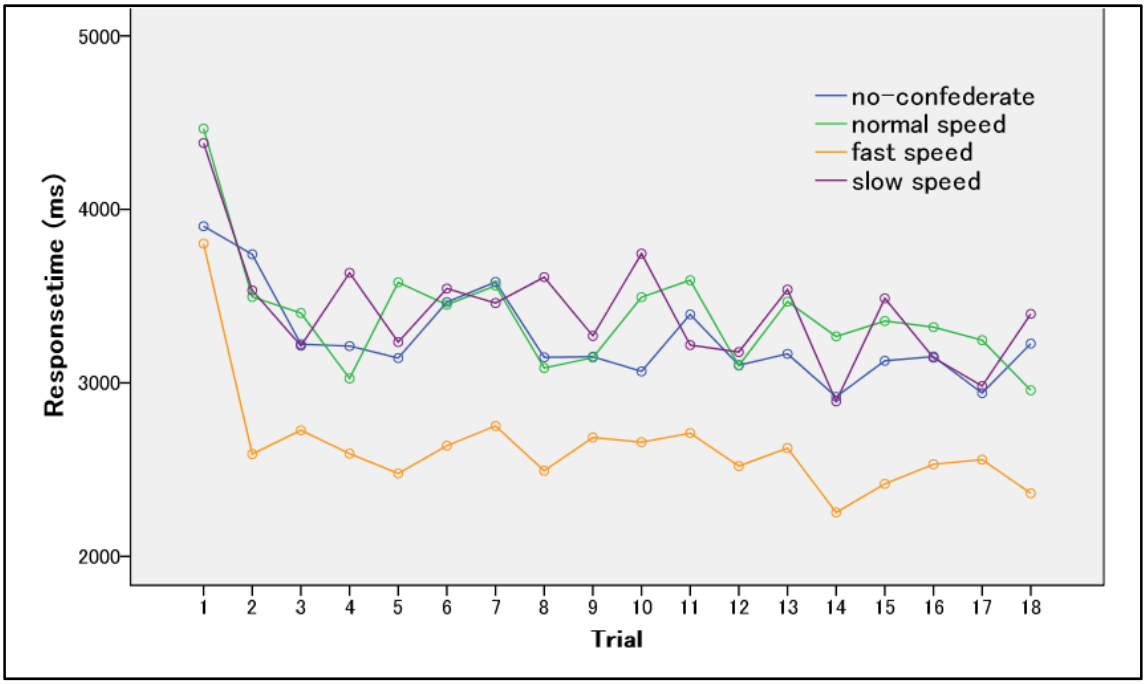

Figure 3. Timing of conformity.

Finally, we tested whether or not the degree of satisfaction with the decision-making process fell due to the presence of another person ($M_{no\text{-}confederate}$ = 3.77, SE = 0.13; M_{normal} = 3.67, SE = 0.14; M_{fast} = 3.70, SE = 0.14; M_{slow} = 3.63, SE = 0.15). The analysis of variance results shows that the main effects of the conditions were not significant ($F(3,116) = 0.17$, n.s.). This means H2 isn't supported. Even when making decisions at the high speed of the other person, participant satisfaction remained unaffected. It is very interesting that there was no difference in satisfaction even when comparing cases of doing the task alone versus conditions when would be expected that one would feel pressure from doing the task at the other person's higher speed (during which the time actually spent by the participant on decision-making was shorter).

The mere presence of another person had no effect on satisfaction, but a correlation analysis was undertaken to check the relationship between a high awareness of another's presence and lower satisfaction (H3). Looking at all three conditions in which another person was present, although the coefficient itself can be said to be significant (r = -0.083, $p < 0.01$), it cannot be said that there is a correlation. Looking at each condition, the slow condition was r = 0.089 ($p < 0.1$), the normal condition was r = -0.098 ($p < 0.05$), and the fast condition was r = -0.299 ($p < 0.01$). Each had a weak correlation, but a higher speed (compared to those in the other conditions) showed a tendency toward a decline in satisfaction in the decision-making process, in direct proportion to how much the participant was bothered by the presence of the other person.

The results of Study 1 allowed us to clarify the following important points: (1) The transmission of decision-making speed occurred only for higher speeds; (2) The transmission of high speed occurred

immediately after perceiving that speed; (3) There was no difference in selection accuracy compared to the normal speed, even if the decision-making speed was increased on account of the influence of the other person; and (4) The degree of satisfaction with the decision-making process did not change, even when the time spent on it was shorter due to the influence of the other person. However, in this case, when the subject's awareness of the other person was greater, there was a tendency for satisfaction to be lower.

Next, in Study 2, we perform an additional test that focuses on how the other person's speed had an effect on the test subject. Specifically, we do not know if the results of the speed transmission in Study 1 are derived from the influence of the other person, or from the sound of the beep. Thus, we examine whether the transmission of speed would occur in the absence of another person, or simply from the sound of a beeping pacemaker in Study 2.

Study 2

Hypothesis: The Other Person's Physical Presence

Watanabe (2008), when testing speed transmission, used randomly scrambled biological motion at the starting point of dots in addition to biological motion, and used an object motion stimulus that created a square shape from dots. As mentioned, the experiment results were that speed was transmitted only after exposure to a biological motion stimulus; in other situations, for example, scrambled motion or object motion that did not look like human movement—speed transmission did not occur. Thus, in this study as well, we hypothesize that transmission of the higher speed will not occur solely on account of the sound of a beep as from a metronome, and that transmission will occur on account of the physical presence of the other person.

H4: Transmission of speed will not occur without the physical presence of another person.

Methods

Participants were 30 university students with no knowledge of the objectives of this study (15 men, 15 women; average age 20.25 years). Stimuli and equipment were the same with Study 1.

Procedure

Aside from the following points, the procedure was the same as that for Study 1. As with Study 1, two laptop computers were set up in advance, but the participant completed the task alone. When the experiment began, the participant was told that the laptop computer next to you is performing a program check, so it will make some sounds. When the participant began the task, the unmanned computer next to them beeped with the same timing as the fast condition from Study 1. This condition was called the "fast-sound condition", and that is, the only difference between this condition and the fast condition from Study 1 was that there was no confederate in this condition.

Results

The average response times for each decision-making task were calculated, and compared to the no-confederate and fast condition results from Study 1 (Figure 4). That is to say, the case of executing a task independently, the case of executing it with a person next to oneself who is executing it quickly, and the case in which there was no person present and a beeping noise was made at a high speed were all compared, and the transmission of speed was tested. We generated analysis of variance results for one factor and three levels, and found that the principal effect of the conditions was significant ($F(2,87) = 6.81$, $p < 0.01$). The result of a multiple comparison (Turkey test) clarified that the response time of the fast condition was significantly shorter

than that for the no-confederate condition ($p < 0.01$), and furthermore, that there was significantly shorter than that of the fast-sound condition ($p < 0.05$). No significant difference was observed between the no-confederate condition and the fast-sound condition, and this indicated that no acceleration of decision-making speed occurred without the physical presence of another person.

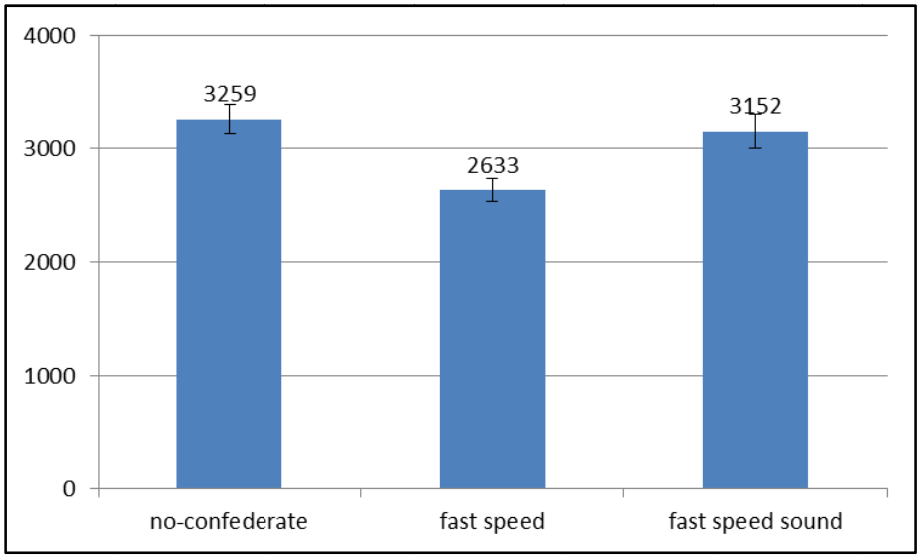

Figure 4. The effect of the physical presence of another person on the response time (ms).

Discussion

In Study 1, which was performed to verify the transmission of decision-making speed from another person, response times were compared across four conditions: the participant executing the task alone, or with another person present and executing the same task at a fast speed, at a normal speed, or at a slow speed. Then, results were obtained that it showed that speed was transmitted only when it was fast. Regarding these results, because the given task was simple, it is not possible to interpret that social facilitation occurred due to the presence of another person. The reason is that when the decision-making speed of the other person was normal or slow, the participant's decision-making speed was no different from that when they completed the task alone (condition). These results run counter to those of some previous studies (Zajonc, 1965; Chapman, 1974) that found that arousal levels rise and social facilitation occurs on account of the mere presence of others. Although the other person executed the same task at a distance of about 1.5 m from the participant for all conditions (i.e., fast, normal, or slow), participants felt a difference in degree of awareness of the other person, depending on the condition (speed), and tended to have greater awareness of the other person in terms of the speed of the condition (i.e., from slow to normal to fast). Based on these results, we consider the increase in arousal level to be the premise for social facilitation, rather than occurring by virtue of the presence itself of another person as a co-actor; it is possible that it occurs due to the perception it is a sign related to his or her performance. For example, in the slow condition of this experiment, because the beeping sound was set sufficiently slower than the average decision-making speed, it did not turn out that the participant would start the task and hear his or her partner's beeping sound first. On the other hand, in the fast condition, because the participant would hear his or her partner's beep immediately upon starting the task, which became a sign and they grew aware of the other person, and his or her level of arousal rose. The result was social facilitation in the form of being pulled

along by the partner's speed. In other words, it is interpreted as an acceleration of the decision-making speed.

In Study 2, the importance of the "presence" of the other was ascertained. If the alignment was merely with the speed of the perceived, the decision-making speed should have accelerated with the fast beeping sound alone. However, in the fast speed condition, when we compared having the physical presence of another person with having no other person present (and hearing only a beeping sound), the latter showed no acceleration of decision-making speed. That is to say, the transmission of a faster speed did not occur simply because of a metronome-like sound; it was confirmed that speed transmission is a social phenomenon that occurs only with the nearby presence of another person, and with awareness of that presence.

We also obtained very interesting findings regarding the decision-making results. The presence of others, especially when completing a task at high speed, had been expected to have a negative effect on the decision-making results and the satisfaction of the participants. This is because it was thought that they would feel discomfort or pressure from the presence of the other person, and that if they made decisions quickly—that is to say, pulled along by the speed of the other person—they would make noncommittal judgments or have some dissatisfaction with their decisions. However, the results belie this expectation. For all four conditions (including being alone), there was no difference in satisfaction with decision-making, and no large difference was seen in the task selection results. In summary, it was clear that even the participant had been influenced by the other person and his or her decision-making pace accelerated, there was no drop in accuracy or in satisfaction with the selection.

The results obtained here can be said to be desirable, from the perspective of marketers. This is because the fast decision-making of other customers who happen to be present in the store may speed up the decision-making of some consumers, and could therefore help lower the costs of customer support. Because this speed transmission occurs immediately after perceiving the high speed of others' actions, one can expect results from even short exposure. In circumstances in which there are no issues with privacy or delicate subject matter, rather than be concerned about making sufficient space between customers, it is instead possible to facilitate decision-making by giving support within a sense of distance at which they are aware of others. Because there is no effect on satisfaction with decision-making, even if there is another person present, it is possible to say that this is a tactic that can be proactively introduced.

Conclusion

This study focused on the potential influence that the presence of non-interactive others can have on a consumer in situations in which he or she is selecting or making purchases; it also tested that influence from the perspective of decision-making speed. As to whether or not others' decision-making speeds are transmitted, the answer obtained from this study's experiments was that they are only transmitted when the speed is high. The result of comparing the response times of four conditions (participants completing the task alone, or with another person beside them completing the task quickly, at a normal speed, or slowly), the phenomenon of aligning one's own speed with that of others occurs only under the fast condition. Participants' decision-making speed was not slowed merely because the other person completed the task slowly. Regarding the transmission of high decision-making speeds, rather than occur gradually, it occurred immediately with the first perception of a higher speed. The point is that even when making decisions at a high speed and under the influence of another person, compared to making a decision at one's own pace, there was no difference in the satisfaction with the results or in the accuracy of the decisions made. If it had turned out that this had a negative influence

on the decision-making results, it would be difficult to imagine the use of other customers in sales and other situations. However, since speed transmission occurred only at high speeds and the influence occurred immediately—and, furthermore, did not cause a drop in decision-making accuracy or satisfaction—it is possible to say that using other customers in customer support settings to facilitate decision-making could serve as a realistic strategy. The feelings of the consumers themselves did not become negative because of the presence of other customers; rather, it has been demonstrated that those feelings may rather be improved, relative to those when alone (Argo et al., 2005). Clearly, the influence of others who just happen to be there cannot be ignored.

We would consider situations in which the findings of this study can be put to use. For example, in places such as a shoe store, as mentioned at the beginning of this paper, one could expect to witness this effect. The general flow at a shoe store is that the customer tells a staff member his or her size, and then has the shoes he or she likes bringing from the stock room. The staff member helps the customer who is sitting and waiting to try on the shoes, by checking the fit (through looking and touching); the staff member also offers advice. The staff member is asked for other sizes or styles, brings them out, and must stay with the customer as he or she wavers over various decisions. For shoes, given the need to sit in a chair to try them on, and looking in a mirror, there is no sense of discomfort at being placed at a close distance to other customers. Rather than try to create space among customers, the staff may be able to increase customers' subconscious pace of decision-making by intentionally placing them closer to other customers. Because in a shoe store there are no particular issues with private or delicate topics related to sizes or preferences, it might be said that the hurdle in executing this idea is low. Otherwise, such a strategy is expected to be useful in areas where time costs associated with customer support are large. This study examined the influence of non-interactive others' decision-making speed on the decision-making speed of an individual. While we believe this research has some contribution to both academic and practical field, it is not without its limitations. Because our purpose is understanding the relationship between the presence of the other and one's own decision-making speed, the decision-making task we used was quite simple, and the experiment results herein only clarified a fundamental truth. If one were to suppose decision-making vis-à-vis an actual purchase, it would be necessary to clarify the influence of others by undertaking more complex tasks. This is the major topic that our research should challenge next. Furthermore, aside from the factors and conditions of others that have an influence on, it seems necessary to examine the factors and characteristics of the consumers themselves, who are being influenced by others.

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