

Situational Factors and Waiting Behavior in Adolescents

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[Abstract]

Two studies addressed waiting behavior in adolescents. In Study 1, female college students responded to twenty-four kinds of hypothetical waiting scenarios, set by manipulating situational factors including sex of object (male and female), degree of intimacy with object (high and low), waiting place (park and bookshop) and waiting time (5 minutes, 30 minutes and 60 minutes), using a three-point scale (waiting, unknown or not waiting). Interaction effects were observed between intimacy and waiting place, intimacy and waiting time, sex of the object and waiting place, the sex of object and waiting time, and between waiting place, intimacy and waiting time. We attempted to interpret these results with the cognitive value evaluation model. The cognitive value evaluation model assumes that the frustration that results from waiting makes the subjects lower the evaluation of the value of the waiting object. Consequently, subjects stop waiting when the value of the object becomes lower. In interpreting the results of Study 1 with this model, we changed frustration into anticipated frustration because the study used hypothetical waiting situations. The results of Study 1 were consistent with the cognitive value evaluation model. In Study 2, twelve kinds of hypothetical waiting situations were set by manipulating situational factors of the degree of intimacy (high and low), waiting place (bookshop and park), and waiting time (5 minutes, 30 minutes and 60 minutes). In each scenario, female college students rated the strength of the anticipated frustration and the value of waiting object in addition to their waiting behavior. Thus, Study 2 investigated the validity of cognitive value evaluation model. The results basically supported the cognitive value evaluation model, but the interaction effect in waiting scores observed in Study 1 between waiting place, waiting time and intimacy was not obtained in Study 2. Further research is needed to better understand this result.

Key words: waiting behavior, adolescents, cognitive value evaluation model, delay of gratification.

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Study 1

It is rarely practical to immediately and directly translate one's desires, urges and impulses into action. Often, higher authorities or society at large prohibit behaviors that would be the most immediately gratifying. Therefore, a person must simply learn to wait for rewards that may indeed be forthcoming, but often only after delay. The ability to delay immediate gratification is a key social ability (Funder, Block & Block, 1983).

Research on waiting behavior has typically employed a paradigm in which subjects are confronted with situations where they must make choices between immediately available but less valued rewards and delayed but more valuable options. It has been argued (Mischel 1966, 1974) that the choice of delayed rewards may be conceptualized as the ability to overcome the desires for immediate gratification.

Using this paradigm, much research concerning the developmental changes of waiting behavior has been conducted. Melikan (1959) presented Arab children, aged 5 to 10 years, with the choice between 2.5 cents that was immediately available or 5 cents to be awarded 2 days later, and found that the major shift to preponderance to delay reward choice occurred at age 6.

Mischel & Metzner (1962), using delay intervals ranging from 1 day to 4 weeks and the choice between a small or large candy bar located the major shifts at 8.5 to 9 years. Nisan (1974) instructed children aged 6, 7, 8 and 9 to choose between an immediate reward and a delayed larger reward. Half of the children in each age group saw the rewards before choosing (standard condition), while the other half did not. The results indicated that the major shift to a preponderance of delayed reward choices occurred at age 7 in the standard condition.

These studies suggested that there is variation of age at which a major shift of delayed reward choices occurs, but were consistent in finding that preference for a larger delayed reward was positively related to age.

As described above, a major shift was found in children of kindergarten to elementary school age. It may be hypothesized from these studies that adolescents have developed the ability to wait for objects, but an adolescent's waiting behavior might be influenced by situational variables. Therefore, it is important to investigate the

situational variables that influence adolescents' waiting behavior from the point of view of social psychology.

Mitsutomi & Kobayashi (2012) set the hypothetical waiting situation and investigated whether situational variables such as the value of the object, waiting place and waiting time influenced the waiting behavior in adolescents. The value factor of the object consisted of a condition assumed to have a higher value, waiting for a boyfriend, compared to a condition of lower value, waiting for a regular friend. Waiting places consisted of a park that offered fewer distractions from waiting and a tea-room with more distractions during the waiting period. Waiting times were 5, 30, and 60 minutes.

The results indicated that waiting time influenced the waiting behavior in adolescents: the longer the waiting time, the lower the waiting scores. There was also an interaction between the value of the object and waiting place. The boyfriend condition had lower waiting scores regardless of the waiting place. On the other hand, the tea-room had higher waiting scores than the park when waiting for a friend. Mitsutomi & Kobayashi (2012) interpreted these findings using the cognitive value evaluation model. This model assumes that waiting results in an increase of frustration and this frustration causes the person to lower the value of the object; consequently, the person is more likely to stop waiting when the value of the object becomes lower. Because their study did not use an actual waiting situation, Mitsutomi & Kobayashi (2012) considered frustration as anticipated frustration to interpret their results using the cognitive value evaluation model.

The results were interpreted as follows. The longer the waiting time, the more frustration the subjects anticipated; this stronger anticipation of frustration causes the subjects to lower the value of the objects. Thus, waiting time might influence the waiting behavior.

Because the boyfriend condition was considered to have higher value than the friend condition, the subjects anticipated stronger feelings of frustration during the boyfriend condition. The stronger anticipation of frustration then caused the subjects to place a higher value on the friend than the boyfriend. Thus, in the boyfriend condition, subjects might have lower waiting scores regardless of the waiting place.

On the other hand, in the friend condition, the tea room supplied more opportunities for distraction during the waiting period so subjects anticipated more frustration if made to wait in the park. Therefore, in the tea-room, subjects did not lower the value of the objects as was done

in the park, and the tea-room had higher waiting scores than the park when waiting for a friend.

The second study of Mitsutomi & Kobayashi (2012) investigated whether the interpretation described above was valid, and the results indicated that the cognitive value evaluation model was not valid for interpreting the results of their Study 1. However, Study 1 of Mitsutomi & Kobayashi (2012) might have lacked a strictly controlled experimental design. Therefore, we carefully examined Study 1 of Mitsutomi & Kobayashi (2012) and planned a strictly controlled experimental design.

The first problem in the original study was the manipulation of the object. In the case of the friend, we do not know whether subjects imagined a friend of the same sex or a friend of the opposite sex, which might influence the waiting behavior. Therefore, we manipulated the sex of the object. Furthermore, in the case of the friend, we do not know the level of intimacy that the subject might have with the object. The degree of intimacy with the object might also influence the waiting behavior in adolescents.

The second problem was the manipulation of the waiting place. Study 1 of Mitsutomi & Kobayashi (2012) attempted to manipulate the waiting place by considering the degree of distraction during the wait. Indeed, a tea-room might offer many distractions. However, this place might simultaneously be more conspicuous than a park. Therefore, subjects might evaluate the value of object that has them wait in the tea-room lower, particularly when waiting for a boyfriend, even if there is no strong anticipation of frustration. Thus, there might not be any differences in the waiting scores between the tea-room and park if waiting for a boyfriend.

In the present study, we manipulated the sex of the object and the degree of intimacy with the object. We defined the object as a boyfriend with a high degree of intimacy and the opposite sex. We also defined the object as an intimate friend with a high degree of intimacy and the same sex.

In Study 1, we attempted to manipulate the waiting place so that the degree of distraction was the only difference. In addition, we manipulated the waiting time in a similar manner to Study 1 of Mitsutomi & Kobayashi (2012).

Thus, the purpose of this study was to manipulate the situational factors of the degree of intimacy with the object, sex of the object, waiting place, and waiting time and was to investigate whether these

factors influenced the waiting behavior in adolescents.

Method

The experimental design was a $2 \times 2 \times 2 \times 3$ factorial design. The first factor was the degree of intimacy with the object and consisted of high and low conditions. The second factor was the waiting place; locations consisted of a park setting that offered few distractions from waiting and a bookshop setting that readily provided distractions.

The third factor was sex of the object: either male or female. The fourth factor was the waiting time and consisted of three levels: 5, 30, and 60 minutes. These factors were considered within subject factors. All combinations of factors were explored, resulting in twenty-four hypothetical waiting situations.

Subjects: Forty-three female college students participated in the present study.

Questionnaire: Subjects were asked to respond to questionnaires regarding hypothetical waiting situations using a three-point scale (wait, unknown, not wait). Each hypothetical waiting situation was described in the questionnaire. The basic form of the situation was as follows: "You are meeting the person (object) at a specific place (waiting place). Minutes (waiting time) elapsed. However, the person still does not come."

In the situation where the sex of object was female and the degree of the intimacy with the object was high, the word for intimate female (intimate friend) was used for the waiting object. On the other hand, where the sex of object was male and the degree of the intimacy with the object was high, the term for intimate male (boyfriend) was written.

The waiting places were described at the top of the questionnaire. A sentence explained that there was only one bench in the park. Another sentence described the bookshop with a variety of books that subjects could freely browse and read.

The information concerning the waiting place, the degree of intimacy, the sex of waiting object and waiting time were written in the gothic type.

Procedure: The survey was administered in the students' classroom. It took approximately 30 minutes to complete the questionnaires.

Statistical analysis: An analysis of variance (ANOVA) was performed: 2 (degree of intimacy with the object) \times 2 (sex of the object) \times 2 (waiting place) \times 3 (waiting time), using the waiting score as the

dependent variable.

Results

Mean waiting scores for the twenty-four conditions are shown in Table 1. The ANOVA showed main effects of the waiting place ($F = 7.86$, $df = 1/42$, $p < .01$), the degree of intimacy with the object ($F = 30.63$, $df = 1/42$, $p < .01$) and waiting time ($F = 127.34$, $df = 2/84$, $p < .01$). Furthermore, there were interaction effects between waiting place and the degree of intimacy with the object ($F = 5.11$, $df = 1/42$, $p < .05$), between waiting place and sex of the object ($F = 6.43$, $df = 1/42$, $p < .05$), between the degree of intimacy and waiting time ($F = 4.57$, $df = 2/84$, $p < .05$), between sex of the object and waiting time ($F = 3.80$, $df = 2/84$, $p < .05$) and between waiting place, degree of intimacy and waiting time ($F = 6.60$, $df = 2/84$, $p < .01$).

First, the main effects of waiting time were analyzed. The results indicated that the 5-minute condition had significantly higher waiting scores than either the 30- or 60-minute conditions (30 minutes, $t = 7.06$, $df = 84$, $p < .01$; 60 minutes, $t = 15.93$, $df = 84$, $p < .01$). The waiting scores for the 30-minute condition were higher than for the 60-minute condition ($t = 8.87$, $df = 84$, $p < .01$).

Second, the interaction effects between the waiting place and the degree of intimacy were analyzed. The effect of waiting place was significant for high intimacy ($F = 12.55$, $df = 1/84$, $p < .01$), and the bookshop had higher waiting scores than the park. The effect of intimacy was analyzed for each waiting place condition, and was significant for both the park and bookshop conditions (park, $F = 16.01$, $df = 1/84$, $p < .01$; bookshop, $F = 35.60$, $df = 1/84$, $p < .01$). High intimacy had higher waiting scores than low intimacy in both conditions.

Third, the interaction effects between waiting place and sex of the object were analyzed. The effect of the waiting place was analyzed for

Table 1 The mean waiting scores for each condition

| | Book shop | | | | Parke | | | |
|----------------|------------|----------|------------|----------|------------|----------|------------|----------|
| | Intimacy H | | Intimacy L | | Intimacy H | | Intimacy L | |
| | Same | Opposite | Same | Opposite | Same | Opposite | Same | Opposite |
| Five minutes | 3.00 | 2.91 | 2.86 | 2.91 | 2.95 | 2.93 | 2.79 | 2.70 |
| Thirty minutes | 2.84 | 2.56 | 2.37 | 2.11 | 2.44 | 2.54 | 2.23 | 2.05 |
| Sixty minutes | 2.05 | 2.12 | 1.72 | 1.51 | 1.63 | 1.91 | 1.58 | 1.72 |

sex of the object. The results indicated that the effect of the waiting place was significant for the female condition ($F = 14.06$, $df = 1/84$, $p < .01$), with the bookshop waiting scores higher than those of the park. The effect of sex of the object was analyzed for each waiting place and was significant for the bookshop condition ($F = 6.52$, $df = 84$, $p < .05$); the female condition had higher waiting scores than the male condition.

Fourth, the interaction effects between the degree of intimacy with the object and waiting time were analyzed. The effects of intimacy were analyzed for each waiting time. The effects of intimacy were significant for the longer waiting times (30 minutes, $F = 31.50$, $df = 1/126$, $p < .01$; 60 minutes, $F = 16.54$, $df = 1/126$, $p < .01$). The high intimacy condition had higher waiting scores than low intimacy for both of these waiting times.

For each intimacy condition, the effects of waiting time were analyzed, and were significant for both high and low intimacy (high intimacy, $F = 79.84$, $df = 2/168$, $p < .01$; low intimacy, $F = 103.08$, $df = 2/168$, $p < .01$). The 5-minute condition had significantly higher waiting scores than 30 minutes and 60 minutes (high intimacy, 30 minutes, $t = 4.31$, $df = 168$, $p < .01$; 60 minutes, $t = 12.44$, $df = 168$, $p < .01$; low intimacy, 30 minutes, $t = 7.56$, $df = 168$, $p < .01$; 60 minutes, $t = 14.35$, $df = 168$, $p < .01$) and the 30-minute condition had higher waiting scores than 60 minutes (high intimacy, $t = 8.13$, $df = 168$, $p < .01$; low intimacy, $t = 6.79$, $df = 168$, $p < .01$).

Next, the interaction effects between sex of the object and waiting time were analyzed. The simple main effects of sex of the object were analyzed for each waiting time, with the female condition having higher waiting scores than the male in the 30-minute waiting time ($F = 6.97$, $df = 1/126$, $p < .01$).

The effects of the waiting time were analyzed for each sex condition and were significant for both (female, $F = 105.56$, $df = 2/168$, $p < .01$; male, $F = 84.57$, $df = 2/168$, $p < .01$). The 5-minute condition had significantly higher waiting scores than 30 minutes and 60 minutes for the female and male conditions (female, 30 minutes, $t = 5.35$, $df = 168$, $p < .01$; 60 minutes, $t = 14.37$, $df = 168$, $p < .01$; male, 30 minutes, $t = 6.79$, $df = 168$, $p < .01$; 60 minutes, $t = 13.00$, $df = 168$, $p < .01$). The 30-minute condition also had significantly higher waiting scores than 60 minutes (female, $t = 9.03$, $df = 168$, $p < .01$; male, $t = 6.21$, $df = 168$, $p < .01$).

Finally, the interaction effects between the waiting place, the degree of intimacy with the object and waiting time were analyzed. First, the interaction effects between the waiting place and intimacy were

analyzed for each waiting time, showing an interaction in the 60-minute condition ($F = 15.12$, $df = 1/126$, $p < .01$).

Second, the interaction effect between the waiting place and waiting time was analyzed for each intimacy condition. In the high intimacy condition, the interaction between waiting place and waiting time was significant ($F = 4.05$, $df = 2 / 168$, $p < .05$).

Third, the interaction effect between degree of intimacy with the object and waiting time was analyzed for each waiting place, with a significant interaction for the bookshop ($F = 8.29$, $df = 2/168$, $p < .01$).

The effects of the waiting place were analyzed for six conditions that combined the two levels of intimacy with three levels of the waiting time. For the high intimacy 30-minute condition, the bookshop had higher waiting scores than the park ($F = 6.83$, $df = 1/252$, $p < .01$). Similarly, the bookshop had higher waiting scores than the park in the high intimacy 60-minute condition ($F = 15.37$, $df = 1/252$, $p < .01$).

The effects of intimacy were analyzed for the six conditions combining the waiting places and waiting times. High intimacy had higher waiting scores than low intimacy in the conditions in which the waiting place was the bookshop and waiting time was either 30 minutes ($F = 28.88$, $df = 1/252$, $p < .01$) or 60 minutes ($F = 30.38$, $df = 1/252$, $p < .01$). Higher waiting scores for high intimacy than low intimacy were also found when the waiting place was the park and waiting time was 5 minutes ($F = 5.49$, $df = 1/252$, $p < .05$) and 30 minutes ($F = 17.09$, $df = 1/252$, $p < .01$).

The effects of the waiting time were significant for the four conditions that combined the two levels of waiting place with the two levels of intimacy (bookshop and high intimacy, $F = 41.54$, $df = 2/336$, $p < .01$; bookshop and low intimacy, $F = 83.02$, $df = 2/336$, $p < .01$; park and high intimacy, $F = 72.51$, $df = 2/336$, $p < .01$; and park and low intimacy, $F = 61.97$, $df = 2/336$, $p < .01$). The 5-minute condition had significantly higher waiting scores than the 30-minute conditions (bookshop and high intimacy, $t = 2.60$, $df = 336$, $p < .01$; bookshop and low intimacy, $t = 6.50$, $df = 336$, $p < .01$; park and high intimacy, $t = 4.61$, $df = 336$, $p < .01$; park and low intimacy, $t = 6.15$, $df = 336$, $p < .01$) and also than the 60-minute conditions (bookshop and high intimacy, $t = 8.87$, $df = 336$, $p < .01$; bookshop and low intimacy, $t = 12.86$, $df = 336$, $p < .01$; park and high intimacy, $t = 11.94$, $df = 336$, $p < .01$; park and low intimacy, $t = 11.11$, $df = 336$, $p < .01$). The 30-minute conditions had higher waiting scores than the 60-minute conditions (bookshop and high intimacy, $t = 6.27$, $df = 336$,

$p < .01$; bookshop and low intimacy, $t = 6.38$, $df = 336$, $p < .01$; park and high intimacy, $t = 7.33$, $df = 336$, $p < .01$; park and low intimacy, $t = 4.97$, $df = 336$, $p < .01$).

Discussion

We attempted to interpret the results of the present study using the cognitive value evaluation model. This model assumes that frustration increases during waiting, causing the person to lower the value of the object. The person then stops waiting when the value of the object becomes lower. The present study does not use an actual waiting situation, so we changed “frustration” into “anticipated frustration when” interpreting the results of the present study using the cognitive value evaluation model.

Interaction effects between waiting place and degree of intimacy with the object were observed and interpreted using the cognitive value evaluation model as follows. Subjects might not anticipate more frustration with high intimacy compared to low intimacy. Additionally, the value of the object might originally be higher for the high intimacy condition compared to the low intimacy condition. Therefore, subjects might not lower the value of the object with high intimacy compared to low intimacy. Thus, high intimacy might have higher waiting scores than low intimacy.

Furthermore, with high intimacy, subjects might anticipate less frustration in the bookshop, which provides distraction from waiting, compared to the park condition in which there are fewer distractions. Thus, with high intimacy, subjects might not lower the value of the object in the bookshop condition or anticipate more frustration compared to the park condition. Therefore, the bookshop might have higher waiting scores than the park for high intimacy.

On the other hand, in the low intimacy condition, subjects might lower the value of the object, even in the bookshop condition in which subjects do not anticipate more frustration, because the value of the object was originally low in low intimacy. Thus, there might not be significant differences in the waiting scores between the park, in which the subject anticipates more frustration, and the bookshop in the low intimacy condition.

The interaction effects between sex of the object and waiting place might be interpreted as follows. Females might evaluate the opposite

sex more strictly than the same sex even if anticipating similar feelings of frustration. Therefore, in the bookshop, subjects might anticipate equal feelings of frustration, and might lower the value of the opposite sex friend compared to friends of the same sex. Thus, the female condition might have higher waiting scores than the male condition when subjects would be waiting for the object in the bookshop where subjects might not anticipate stronger feelings of frustration.

On the other hand, subjects might lower the value of the object, even in the female condition in which subjects might not evaluate the object as strictly, in the park condition because the park provides fewer distractions from waiting and stronger anticipation of frustration. Thus, there might not be a significant difference in the waiting scores between the female condition and the male condition when the subjects wait for the object in the park.

The interaction between degree of intimacy with object and waiting time is explained with the cognitive value evaluation model as follows. In the 5-minute condition, subjects might not anticipate feelings of frustration even with low intimacy.

Therefore, subjects might not lower the value of the object and have higher waiting scores. .

On the other hand, for 30 minutes and 60 minutes, subjects might anticipate more frustration for low intimacy compared to high intimacy. Furthermore, the value of the object originally would be higher for the high intimacy condition than for the low intimacy condition. Thus, for high intimacy, subjects might not lower the value of the object relative to low intimacy in the 30- and 60-minute conditions, so high intimacy conditions would maintain higher waiting scores.

The interaction effect between the sex of the object and waiting time could be interpreted as follows. For 5 minutes, subjects might not anticipate stronger feelings of frustration for either the female or male conditions. Thus, even in the male condition where subjects might evaluate the object more strictly, subjects might not lower the value of the object. Therefore, both the female and male conditions might have higher waiting scores for 5 minutes.

On the other hand, subjects might anticipate stronger feelings of frustration if they had to wait for 30 minutes. Furthermore, subjects might evaluate the opposite sex more strictly than the same sex even if they anticipate similar feelings of frustration. Thus, the female condition might have higher waiting scores than the male condition for the 30-

minute waiting time. If subjects had to wait for 60 minutes, they might anticipate greater frustration and lower the value of the object, even if the friend was a female and evaluated less strictly. Thus, both the female and male conditions might have lower waiting scores if the waiting time was 60 minutes.

Finally, the interaction effects between the degree of intimacy with the object, waiting place and waiting time might be interpreted as follows. For low intimacy, subjects might anticipate some frustration if made to wait 5 or 30 minutes if they had to wait in the park with few distractions. The value of the waiting object might originally be low, and might be lowered due to anticipated frustration. Thus, the waiting scores would be lower when subjects wait for the object with low intimacy in the park for 5 or 30 minutes.

However, for both the 5- and 30-minute conditions, the waiting scores were higher if the degree of intimacy with the object was higher, even when the subjects had to wait for the object in the park with fewer distractions. With high intimacy, subjects might not anticipate stronger feelings of frustration than with low intimacy. Furthermore, the value of the waiting object originally might be higher for high intimacy condition. Therefore, with high intimacy, subjects might not lower the value of the object compared to the low intimacy conditions, even when they had to wait in the park with fewer distractions. Thus, for 5 minutes and 30 minutes, waiting scores might be higher, even when subjects wait in the park, if the degree of intimacy was high.

When subjects had to wait for 60 minutes in the park, however, they might anticipate stronger feelings of frustration even with high intimacy. Consequently, subjects might lower the value of the object, even if the value of the object was originally high. Thus, in the 60-minute condition, even with high intimacy, waiting scores might be lower when subjects wait in the park with fewer distractions.

Even if they had to wait for 60 minutes, subjects might not anticipate stronger feelings of frustration when the degree of intimacy was high and they were waiting in a bookshop that offers more distraction. Thus, subjects might not lower the value of the object, even if made to wait for 60 minutes, leading to higher waiting scores when intimacy was high and in a setting with more distractions such as a bookshop.

Thus, we could interpret the results of Study 1 using the cognitive value evaluation model. In conclusion, Study 1 suggests there are

complex interactions between situational factors that influence waiting behavior in adolescents.

Study 2

The purpose of Study 2 was to investigate whether the interpretation of results of Study 1 based on the cognitive value evaluation model was valid. Study 2 made the sex of the waiting object female and manipulated waiting place (park and bookshop), the degree of the intimacy with the waiting object (high and low) and waiting time (5, 30, and 60 minutes). In addition to the waiting behavior scores used in Study 1, Study 2 assessed the strength of the anticipated frustration and the value of the waiting object in twelve hypothetical waiting situations.

The following hypotheses were set on the basis of the Study 1.

Hypothesis (1): interaction effects in the waiting scores between waiting place and the degree of intimacy with the object are observed. Subjects do not anticipate more frustration with high intimacy compared to low intimacy. Furthermore, the value of the object is originally higher for the high intimacy condition compared to the low intimacy condition. Therefore, subjects do not lower the value of the object with high intimacy relative to the low intimacy. Thus, high intimacy has higher waiting scores than low intimacy.

Furthermore, with high intimacy, subjects do not anticipate more frustration in the bookshop, which provides distraction from waiting, compared to the park condition, with few distractions. Thus, with high intimacy, subjects do not lower the value of the object in the bookshop condition or anticipate more frustration compared to the park condition. Therefore, the bookshop has higher waiting scores than the park for high intimacy.

On the other hand, in the low intimacy condition, subjects lower the value of the object, even in the bookshop condition in which subjects do not anticipate more frustration, because the value of the object is originally low. Thus, there is no significant difference in the waiting scores between the park, in which subjects anticipate more frustration, and the bookshop in the low intimacy condition.

Hypothesis (2): an interaction effect between degree of intimacy with the object and waiting time is also observed in the waiting scores. In the 5-minute condition, subjects do not anticipate stronger feelings of frustration even with low intimacy. Therefore, subjects do not lower the

value of the object. Thus, for a wait of 5 minutes, there is no significant difference in the waiting scores between high and low intimacy.

On the other hand, for 30 and 60 minutes, subjects anticipate more frustration for low intimacy compared to high intimacy. Furthermore, the value of waiting object is originally higher for the high intimacy condition. Thus, for high intimacy, subjects do not lower the value of the object compared to low intimacy in the 30- and 60-minute conditions. Therefore, high intimacy has higher waiting scores than low intimacy for 30 minutes and 60 minutes.

Hypothesis (3): interaction effects in the waiting scores between the degree of intimacy with the object, waiting place and waiting time are observed. For low intimacy, subjects anticipate some frustration if made to wait 5 or 30 minutes in the park with few distractions. Therefore, with low intimacy, subjects might further lower the value of the object, leading to lower waiting scores.

However, if the degree of intimacy with the object is higher, the waiting scores for 5 and 30 minutes are higher, even when the subjects had to wait for the object in the park with fewer distractions. With high intimacy, subjects do not anticipate stronger feelings of frustration than with low intimacy. Furthermore, the value of the object is originally higher in high intimacy. Therefore, with high intimacy, subjects do not lower the value of the object. Thus, for 5 minutes and 30 minutes, waiting scores are higher, even when subjects wait in the park, if the degree of intimacy is high.

However, when subjects have to wait for 60 minutes in the park, they anticipate stronger feelings of frustration even with high intimacy. Therefore, subjects lower the value of the object, even with high intimacy. Consequently, waiting scores are lower when subjects wait in the park that has few distractions from waiting.

Even if they have to wait for 60 minutes, however, subjects do not anticipate stronger feelings of frustration when the degree of the intimacy is high and they are in a bookshop that offers more distraction. Thus, subjects do not lower the value of the objects. Therefore, even if made to wait for the longest period, subjects have higher waiting scores when intimacy is high and in a setting that offered distractions from waiting.

Hypothesis (4): there is a negative relationship between the anticipated frustration strength scores and the value scores of the waiting object in the twelve hypothetical waiting situations. There is also

a negative relationship between the anticipated frustration strength scores and waiting scores. Furthermore, there is a positive relationship between the value scores of the waiting object and waiting scores.

Method

The experiment was a $2 \times 2 \times 3$ factorial design. The first factor was the degree of the intimacy with the waiting object, high or low. The second factor was waiting place. Two places were used: the bookshop condition that offers more distractions and the park condition that offers few distractions. The third factor was the waiting time and consisted of three levels, i.e., 5, 30, and 60 minutes. These factors were considered within subject factors. In all twelve hypothetical waiting situations, the sex of waiting object was female.

Subjects: Twenty female college students participated in Study 2.

Questionnaire: Information regarding the waiting place was given at the top of the questionnaire, describing the park situation as having only one bench. Additionally, the bookshop was described as having a variety of books that the subject could freely browse and read while waiting.

The basic form of the hypothetical waiting situation was described as follows. You are meeting the female (object) at a specific place (waiting place). Minutes (waiting time) have elapsed. However, the female (object) still does not come.

Twelve kinds of hypothetical waiting situations were set by manipulating the three factors, i.e., waiting place (park and bookshop), waiting time (5, 30, and 60 minutes) and the degree of the intimacy with the object (high and low). Different words were used to clarify the intimacy relationship; in the situation where the degree of the intimacy with the female was high, the word for intimate female (the intimate friend) was written in the section of waiting object. When the degree of the intimacy with the female was low, a term for a female who is not intimate so much was written in the section of waiting object. The information concerning the waiting place, the degree of intimacy and waiting time were written in the gothic type.

Subjects rated the anticipated frustration strength, the value of the waiting object, and waiting behavior in hypothetical waiting situation. The anticipated frustration strength was rated with a seven-point scale. The questionnaire item was as follows. How much do you experience iraira (the Japanese word for frustration) when you were kept waiting

for the waiting time (five minutes, thirty minutes or sixty minutes) in the waiting place (park or bookshop) by the female (the degree of the intimacy is high or low)? Anticipate.

Next, the value of the waiting object was rated with a seven-point scale. The questionnaire item was as follows. How much do you dislike the female (the degree of the intimacy is high or low) that would have you wait for waiting time (five minutes, thirty minutes, or sixty minutes) in the waiting place (park or bookshop)?

Finally, subjects rated the waiting behavior, using the original three-point scale (wait, unknown, not wait). The questionnaire item was as follows. Do you wait any longer for the female (the degree of the intimacy is low or high) that you have waited for the waiting time (five minutes, thirty minutes or sixty minutes) in the waiting place (park or bookshop)?

The survey was administered in the students' classroom and took about 30 minutes to complete.

Results

The mean waiting scores for each condition are shown in Table 2. An ANOVA was performed using the waiting scores as the dependent variable.

There were main effects of the waiting time ($F = 61.9$, $df = 2/38$, $p < .01$) and intimacy ($F = 19.6$, $df = 1/19$, $p < .01$). Furthermore, there were interactions between waiting place and intimacy ($F = 8.33$, $df = 1/19$, $p < .01$) and between intimacy and waiting time ($F = 4.02$, $df = 2/38$, $p < .05$).

The 5-minute condition had significantly higher waiting scores than the 30- and 60-minute conditions (30 minutes, $t = 4.54$, $df = 38$, $p < .01$; 60 minutes, $t = 11.07$, $df = 38$, $p < .01$). The 30-minute condition also had significantly higher waiting scores than 60 minutes ($t = 6.53$, $df = 38$, $p < .01$).

Second, the interaction effects between waiting place and intimacy

Table 2 The mean waiting scores for each condition

| | Book shop | | Parke | |
|----------------|------------|------------|------------|------------|
| | Intimacy H | Intimacy L | Intimacy H | Intimacy L |
| Five minutes | 3.00 | 2.80 | 2.95 | 2.85 |
| Thirty minutes | 2.85 | 2.15 | 2.45 | 2.20 |
| Sixty minutes | 2.10 | 1.35 | 1.95 | 1.45 |

were analyzed. The effect of the waiting place was analyzed for each intimacy condition. In the high intimacy condition, the bookshop had significantly higher waiting scores than the park ($F = 5.07$, $df = 1/38$, $p < .05$). The effect of the intimacy was analyzed for each waiting place condition. In both the bookshop ($F = 27.55$, $df = 1/38$, $p < .01$) and park conditions ($F = 7.31$, $df = 1/38$, $p < .01$), the high intimacy condition had significantly higher waiting scores than the low intimacy condition.

Third, the interaction effects between intimacy and waiting time were analyzed. The effect of intimacy was analyzed for each waiting time condition, with significant effects for the 30-minute ($F = 12.11$, $df = 1/57$, $p < .01$) and 60-minute conditions ($F=20.98$, $df=1/57$, $p<.01$). The high intimacy condition had significantly higher waiting scores for these conditions.

The effects of the waiting time were analyzed for each intimacy condition. The effects of the waiting time were significant for both the high and low intimacy conditions ($F = 24.75$, $df = 2/76$, $p < .01$; $F = 54.04$, $df = 2/76$, $p < .01$). The 5-minute condition had significantly higher waiting scores than 30 minutes and 60 minutes for the high intimacy (30 minutes, $t = 2.36$, $df = 76$, $p < .05$; 60 minutes, $t = 6.92$, $df = 76$, $p < .01$) and low intimacy (30 minutes, $t = 4.74$, $df = 76$, $p < .01$; 60 minutes, $t = 10.38$, $df = 76$, $p < .01$) conditions. Furthermore, the 30-minute condition had significantly higher waiting scores than 60 minutes for both high intimacy and low intimacy conditions ($t = 4.55$, $df = 76$, $p < .01$; $t = 5.65$, $df = 76$, $p < .01$).

The mean strength scores of the anticipated frustration for each condition are shown in Table 3. An ANOVA was performed using the strength scores of the anticipated frustration as the dependent variable. The main effects of waiting place ($F = 11.67$, $df = 1/19$, $p < .01$), intimacy ($F = 24.24$, $df = 1/19$, $p < .01$) and waiting time ($F = 113.01$, $df = 2/38$, $p < .01$) was significant. There was a trend for an interaction between waiting place and intimacy ($F = 3.55$, $df = 1/19$, $.10 < p < .05$).

The main effect of the waiting time was analyzed and indicated that

Table 3 The mean strength of anticipated frustration for each condition

| | Book shop | | Park | |
|----------------|------------|------------|------------|------------|
| | Intimacy H | Intimacy L | Intimacy H | Intimacy L |
| Five minutes | 1.70 | 2.50 | 2.20 | 3.15 |
| Thirty minutes | 3.30 | 4.65 | 4.50 | 5.20 |
| Sixty minutes | 4.75 | 6.10 | 5.65 | 6.05 |

the 60-minute condition had significantly stronger anticipated frustration than the 5- or 30-minute conditions (5 minutes, $t = 14.89$, $df = 38$, $p < .01$; 30 minutes, $t = 5.61$, $df = 38$, $p < .01$). The 30-minute condition had significantly stronger anticipated frustration than the 5-minute condition ($t = 9.27$, $df = 38$, $p < .01$).

To analyze the interaction effect between waiting place and intimacy, the effect of the waiting place was analyzed for each intimacy condition. For the high intimacy condition, the anticipated frustration scores were higher for the park condition than for the bookshop condition ($F = 15.05$, $df = 1/38$, $p < .01$). In the low intimacy condition, the anticipated frustration scores tended to be higher for the park than the bookshop, but did not reach significance ($F = 2.94$, $df = 1/38$, $.05 < p < .10$).

The effect of intimacy was analyzed for each waiting place condition, and the effects were significant for both the bookshop ($F = 26.30$, $df = 1/38$, $p < .01$) and park ($F = 9.02$, $df = 1/38$, $p < .01$) conditions. The low intimacy condition had higher anticipated frustration scores than the high intimacy condition for both waiting places.

The mean value scores of the waiting object are shown in Table 4. An ANOVA using the value scores of the waiting object as the dependent variable showed main effects of waiting place ($F = 5.52$, $df = 1/19$, $p < .05$), intimacy ($F = 40.45$, $df = 1/19$, $p < .01$), and waiting time ($F = 37.25$, $df = 2/38$, $p < .01$). For waiting time, the 5-minute condition waiting object value scores were significantly higher than those of the 30- and 60-minute conditions (30 minutes; $t = 4.25$, $df = 38$, $p < .01$; 60 minutes; $t =$

Table 4 The mean values of the waiting object for each condition

| | Book shop | | Park | |
|----------------|------------|------------|------------|------------|
| | Intimacy H | Intimacy L | Intimacy H | Intimacy L |
| Five minutes | 6.10 | 4.55 | 5.55 | 4.25 |
| Thirty minutes | 5.25 | 3.65 | 4.75 | 3.35 |
| Sixty minutes | 4.40 | 2.55 | 4.00 | 2.50 |

Table 5 The correlation coefficients between anticipated frustration strength scores and value scores of waiting object

| | Book shop | | Park | |
|----------------|------------|------------|------------|------------|
| | Intimacy H | Intimacy L | Intimacy H | Intimacy L |
| Five minutes | -.76** | -.73** | -.71** | -.80** |
| Thirty minutes | -.57** | -.75** | -.54* | -.74** |
| Sixty minutes | -.54* | -.85** | -.67** | -.15 |

Table 6 The correlation coefficients between anticipated frustration strength scores and waiting scores

| | Book shop | | Park | |
|----------------|------------|------------|------------|------------|
| | Intimacy H | Intimacy L | Intimacy H | Intimacy L |
| Five minutes | / | .06 | .19 | .03 |
| Thirty minutes | -.30 | -.39 | -.58** | -.52** |
| Sixty minutes | -.60** | -.53* | -.59** | .08 |

Table 7 The correlation coefficients between value scores of waiting object and waiting scores

| | Book shop | | Park | |
|-----------------|------------|------------|------------|------------|
| | Intimacy H | Intimacy L | Intimacy H | Intimacy L |
| Five minutes | / | .12 | .23 | .07 |
| Thirty minutes. | .54* | .59** | .61** | .60** |
| Sixtry minutes | .69** | .37 | .77** | .40 |

8.63, $df = 38$, $p < .01$). The 30-minute condition had significantly higher value scores than the 60-minute condition ($t = 4.38$, $df = 38$, $p < .01$).

Table 5 shows the Pearson's correlation coefficients between the anticipated frustration strength scores and value scores of the waiting object in the twelve hypothetical waiting situations. All correlation coefficients were significantly negative, except for one situation. If the subjects waited for a less intimate female for 60 minutes in the park, the correlation was not significant.

Table 6 shows the Pearson's correlation coefficients between the strength of the anticipated frustration and waiting scores in the twelve hypothetical waiting situations. There were no significant correlations for any of the 5-minute conditions, nor was there a correlation in the situation where subjects wait for a less intimate female for 60 minutes in the park. However, correlation coefficients for all other situations were either significant higher negative coefficients or non-significant but moderate negative coefficients.

Table 7 shows the Pearson's correlation coefficients between the value scores of the waiting object and waiting scores in the twelve hypothetical waiting situations. There were no relationships between value and waiting scores in the all 5-minute conditions. All other situations basically had either significant higher positive coefficients or non-significant but moderate positive coefficients.

Discussion

The purpose of the present study was to investigate the validity of four hypotheses based on the cognitive value evaluation model. Looking at the results concerning hypothesis (1), the high intimacy condition had weaker anticipated frustration scores than the low intimacy condition, suggesting that subjects do not anticipate more frustration with high intimacy. Furthermore, the value of the object is originally higher for the high intimacy condition compared to the low intimacy condition. Therefore, subjects do not lower the value of the object with high intimacy compared to low intimacy. In fact, that the value of the object remains higher in the high intimacy condition than the low intimacy condition is obtained. Thus, high intimacy has higher waiting scores than low intimacy.

Furthermore, with high intimacy, the bookshop condition had weaker anticipated frustration than the park condition. This result suggests that with high intimacy, subjects do not anticipate more frustration in the bookshop, which provides distraction from waiting, compared to the park condition, in which there are fewer distractions and therefore do not lower the value of the object. In fact, for high intimacy, the bookshop condition has higher value scores than the park condition. Thus, for high intimacy, the bookshop condition had higher waiting scores.

On the other hand, with low intimacy, the bookshop condition had weaker anticipated frustration than the park condition. This suggests that subjects do not anticipate more frustration for the bookshop condition than for the park condition with low intimacy. However, the value of the object was not very high even in the bookshop condition because it is originally low in the low intimacy. Therefore, there was no significant difference in the waiting scores between the park, in which subjects anticipate more frustration, and the bookshop in the low intimacy condition. Thus, hypothesis (1) was basically supported.

Next, we investigated the validity of hypothesis (2) concerning the interaction effect between the intimacy and waiting time. In the 5-minute condition, subjects do not anticipate stronger feelings of frustration even with low intimacy. In fact, the strength of anticipated frustration in the low intimacy condition is weak, although stronger than for the high intimacy condition. In fact, subjects do not lower the value of

the object even in the low intimacy condition. Thus, for a wait of 5 minutes, there are no significant differences in the waiting scores between low and high intimacy.

On the other hand, in the 30- and 60-minute conditions, the high intimacy condition had weaker strength anticipated frustration than low intimacy condition, although this difference was not significant. This result suggests that for the longer conditions, 30 and 60 minutes, subjects anticipate more frustration for low intimacy. Furthermore, the value of the object is originally higher for the high intimacy condition than for the low intimacy condition. Thus, for high intimacy, subjects do not lower the value of the object compared to low intimacy. In fact, there is a trend for the high intimacy condition to have higher value scores than the low intimacy condition in both 30- and 60-minute conditions. Therefore, high intimacy has higher waiting scores. Thus, hypothesis (2) was basically supported.

We investigated the validity of hypothesis (3) concerning the interaction effects between waiting place, intimacy, and waiting time. The expected interaction effects in waiting scores between waiting place, intimacy and waiting time were not observed, and hypothesis (3) was not supported. Further research is needed to better understand these results.

Hypothesis (4) concerned the correlations between scores. The correlation coefficients basically showed either significant high correlations or non-significant, but moderate correlations in the expected direction. However, in all of the 5 minute situations, low correlation coefficients were observed between waiting scores and the other two scores. Furthermore, low correlations between the anticipated frustration strength scores and the other two scores were obtained in the situation where subjects wait for the less intimate female for 60 minutes in the park. Further research is needed to better understand these results. Thus, hypothesis (4) was only partially supported.

In conclusion, we could basically interpret the results obtained in Study 2 with the cognitive value evaluation model, but further refinement will be necessary to understand some of the discrepancies.

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