

Do Situational Factors Influence Waiting Behavior in Adolescents?

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Two studies were performed to investigate how situational factors affect waiting behaviors. In Study 1, female college students used a three-point scale (wait, unknown, not wait) to respond to eight kinds of hypothetical waiting situations set by manipulating situational factors, such as waiting place, the degree of intimacy, and the sex of the person for whom they are waiting (object). We attempted to interpret the results with a cognitive value evaluation model. This model assumes that the degree of frustration that results from waiting makes subjects lower their evaluation of the value of the object for whom they are waiting. Then, subjects stop waiting as the value of waiting for the object becomes lower. We considered anticipated frustration rather than actual frustration for interpreting the results because we used hypothetical waiting situations. The present study measured the anticipated frustration strength and the value placed on the object in addition to the waiting behavior. We could partially interpret the results with the cognitive value evaluation model. In Study 2, female college students used the same three-point scale (wait, unknown, not wait) to respond to twelve kinds of hypothetical waiting situation set by manipulating situational factors, such as the reason for being late, waiting place, and waiting time. The study measured the anticipated frustration strength and values of the object in addition to the waiting behavior. We could partially interpret the results of Study 2 with the cognitive value evaluation model. Further refinement will be necessary to understand discrepancies.

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

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Study 1

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

Research on waiting behavior has typically employed a paradigm in which subjects are confronted with situations in which they must make choices between immediately available but less valued rewards, as opposed to delayed but more valuable options. Mischel (1966, 1974) argued that the choice of delayed rewards is 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. These studies have yielded the following results. 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 a preponderance of delayed reward choices occurred at age 6.

Mischel & Metzner (1962), using delay intervals ranging from 1 day to 4 weeks and the choice between a small or larger candy bar, located the major shifts at 8.5 to 9 years, with no further change in the proportion of delayed choices between ages 9 and 12. 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, while the other half did not. The major shift to a preponderance of delayed reward choices occurred at age 7 under the reward situation.

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

The previous research described above was conducted with children of kindergarten to elementary school age. It is hypothesized from these studies that adolescents have developed the ability to wait

for objects. However, 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, 2014) set the hypothetical waiting situation where adolescents waited for a person (object) and investigated whether situational variables influenced the waiting behavior in adolescents. The results indicated that the situational factors such as the degree of intimacy with the object, waiting place, and waiting time interact with each other and influence the waiting behavior in adolescents.

The present study focuses on the waiting place (park and bookshop), the degree of intimacy with the object (High (H) and Low (L)), and sex of the object (male and female) as the situational variables and investigates the effects of these situational factors on the waiting behavior in adolescents.

The following points are predicted from the cognitive value evaluation model and results of Mitsutomi & Kobayashi (2012, 2014). In the cognitive value evaluation model, the frustration resulting from waiting causes the subject to lower the value of the object. Subjects stop waiting when the value of the object becomes lower. The present study changed frustration into anticipated frustration, because the present study uses hypothetical waiting situations.

Regarding waiting places, weaker frustration might be anticipated for the bookshop condition where it is easy to distract oneself from waiting, than for the park where it is difficult to distract from waiting. Thus, the object might have a higher value in the bookshop condition and waiting scores might also be higher.

Regarding intimacy, the high intimacy (H) condition might anticipate weaker frustration than the low intimacy (L) condition. Furthermore, the H condition might originally have higher value than the L condition. Thus, the H condition might have higher value than the L condition. Therefore, it is hypothesized that the H condition might have higher waiting scores than the L condition.

Regarding the sex of the object, the male might have the same degree of anticipated frustration as the female. However, female subjects might evaluate the male more strictly than the female even if they anticipate the same degree of frustration. Thus, it is hypothesized that the female object might have higher waiting scores than the male.

The following hypothesis regarding the relationship between anticipated frustration strength, object value, and waiting behavior can be set on the basis of cognitive value evaluation model. There should be negative correlation coefficients between anticipated frustration scores and value scores and between anticipated frustration scores and waiting scores. There should be positive correlation coefficients between value scores and waiting scores.

We explored the interaction between degree of intimacy, waiting place, and sex of the object. The purpose of Study 1 was to manipulate the situational factors such as waiting place, degree of intimacy, and sex of object and to investigate the effects of these situational factors on the waiting behavior in adolescents.

Method

The experimental design was a $2 \times 2 \times 2$ factorial design. The first factor was the waiting place and consisted of the bookshop condition where it is easy to distract from waiting and the park condition where it is difficult to distract from waiting. The second factor was the degree of intimacy. In the high intimacy (H) condition, the subject is familiar with the object and in the low intimacy (L) condition the subject is not as familiar with the object. The third factor is the sex of the objects: male and female. These factors were included as within subject factors. In all eight situations, the waiting time was 30 min.

Subjects: Twenty-two female college students participated in Study1.

Questionnaire: Information regarding the waiting place was given at the top of the questionnaire. The park situation was described as having only one bench. In contrast, 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 person (object) at a specific place (park or bookshop). The person (object) is (H or L degree of intimacy and sex of the object is male or female). Thirty minutes have elapsed. However, the person (object) still has not come."

Eight kinds of hypothetical waiting situations were created by manipulating the factors of waiting place (park and bookshop), degree of intimacy (H and L), and sex of the object (male and female). Different words were used to clarify the intimacy relationship; in the situation

where the degree of the intimacy with the male was high, the word for intimate male (boyfriend) was written in the section for the object. When the degree of the intimacy with the male was low, a term for a male who is not as intimate was written.

When the degree of the intimacy with the female was high, the word for intimate friend was written in the section for the object. When the degree of the intimacy with the female was low, a term for a female who is less intimate was written. The information concerning the waiting place, the degree of intimacy and the sex of object were written in the gothic type.

Subjects rated the anticipated frustration strength, the value of the object, and waiting behavior for each hypothetical waiting situation. The anticipated frustration strength was rated with a seven-point scale. The questionnaire item was as follows. "How much would you experience *iraira* (the Japanese word for frustration) if you were kept waiting for thirty minutes in the (park or bookshop) by the object (the degree of intimacy is high or low and male or female)? Please anticipate."

Next, the value of the object was rated on a seven-point scale. The questionnaire item was as follows. "How much would you dislike the object (the degree of intimacy is high or low and male or female) for having you wait for thirty minutes in the (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. "Would you wait any longer for the object (the degree of intimacy is high or low and male or female) even though you were kept waiting for thirty minutes in the waiting place (park or bookshop)?"

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

Results

The mean waiting scores for each condition are shown in Table 1.

Table 1 The mean waiting scores for each condition

	Park		Bookshop	
	Intimacy H	Intimacy L	Intimacy H	Intimacy L
Males	2.31 (0.76)	1.72 (0.81)	2.68 (0.63)	1.77 (0.79)
Females	2.45 (0.66)	1.91 (0.79)	2.50 (0.72)	2.18 (0.78)

An ANOVA was performed, 2 (waiting place) \times 2 (the degree of intimacy) \times 2 (sex of object), using the waiting scores as the dependent variable.

The main effect of waiting place ($F=3.68$, $df=1/21$, $p=0.07$) approached significance, while the main effect of the intimacy level ($F=19.69$, $df=1/21$, $p<0.01$) was significant. The interaction between intimacy and sex ($F=6.43$, $df=1/21$, $p<0.05$) was also significant, so the simple main effect of intimacy was analyzed for each sex, indicating that the simple main effect of intimacy was significant for both males ($F=25.96$, $p=1/42$, $p<0.01$) and females ($F=8.61$, $df=1/42$, $p<0.01$). The simple main effect of sex was analyzed for each intimacy level, and was significant for the L intimacy condition ($F=5.95$, $df=1/42$, $p<0.05$).

The interaction effects between waiting place, intimacy, and sex ($F=5.86$, $df=1/21$, $p<0.05$) were significant. The interaction effects between waiting place and intimacy ($F=4.13$, $df=1/42$, $p<0.05$) were significant for males. The interaction effects between waiting place and sex ($F=5.02$, $df=1/42$, $p<0.05$) were significant for the H intimacy condition. The interaction effects between intimacy and sex ($F=12.28$, $df=1/42$, $p<0.01$) were significant for the bookshop.

The effects of the waiting place ($F=7.79$, $df=1/84$, $p<0.01$) were significant for the condition of waiting for an intimate male. The effects of the waiting place ($F=4.38$, $df=1/84$, $p<0.05$) were significant for the condition of waiting for a less intimate female. The effects of intimacy (park and male, $F=12.56$, $df=1/84$, $p<0.01$; park and female, $F=10.70$, $df=1/84$, $p<0.01$; bookshop and male, $F=29.73$, $df=1/84$, $p<0.01$; bookshop and female, $F=3.64$, $df=1/84$, $p=0.06$) were significant for all four conditions that combine the two levels of waiting place with the two levels of sex. The effects of sex ($F=8.48$, $df=1/84$, $p<0.01$) were significant for the condition of waiting for a less familiar person in the bookshop.

The mean anticipated frustration scores for each condition are shown in Table 2. An ANOVA was performed, 2 (waiting place) \times 2

Table 2 The mean anticipated frustration strength scores for each condition

	Park		Bookshop	
	Intimacy H	Intimacy L	Intimacy H	Intimacy L
Males	4.86 (1.26)	5.27 (1.54)	3.77 (1.83)	4.86 (1.49)
Females	4.68 (1.18)	5.09 (1.73)	3.36 (1.61)	4.63 (1.67)

(intimacy) \times 2 (sex), using the anticipated frustration scores as the dependent variable. The main effects of intimacy ($F=8.10$, $df=1/21$, $p<0.01$) and waiting place ($F=14.71$, $df=1/21$, $p<0.01$) were significant. Furthermore, the interaction effect between waiting place and intimacy ($F=14.62$, $df=1/21$, $p<0.01$) were significant.

The simple main effects of the waiting place were analyzed for the intimacy condition. For the H condition ($F=26.04$, $df=1/42$, $p<0.01$), the simple main effect of the waiting place was significant, while it approached significance for the L condition ($F=3.35$, $df=1/42$, $p=0.08$). The simple main effects of intimacy were analyzed for each waiting place, and it was significant for the bookshop condition ($F=15.82$, $df=1/42$, $p<0.01$).

The mean value scores of the object are shown in Table 3. An ANOVA was performed; 2 (waiting place) \times 2 (intimacy) \times 2 (sex), using the value scores as the dependent variable. The main effects of the intimacy ($F=15.07$, $df=1/21$, $p<0.01$) and waiting place ($F=7.26$, $df=1/21$, $p<0.05$) were significant.

Table 4 shows the correlation coefficients between anticipated frustration scores and waiting scores. It is clear from Table 4 that all situations except the situation of waiting for an intimate female in the bookshop have no significant correlation coefficients between anticipated frustration scores and waiting scores.

Table 5 shows the correlation coefficients between value scores and waiting scores. It is clear from Table 5 that all situations, except for the

Table 3 The mean value scores for each condition

	Park		Bookshop	
	Intimacy H	Intimacy L	Intimacy H	Intimacy L
Males	3.41 (1.08)	2.77 (1.17)	4.09 (1.56)	2.86 (1.06)
Females	3.95 (1.07)	2.86 (1.14)	4.22 (1.24)	3.04 (1.11)

Table 4 The correlation coefficients between anticipated frustration strength scores and waiting scores

	Park		Bookshop	
	Intimacy H	Intimacy L	Intimacy H	Intimacy L
Males	-.33	-.19	-.37	.08
Females	-.39	-.22	-.46*	-.12

Table 5 The correlation coefficients between value scores and waiting scores

	Park		Bookshop	
	Intimacy H	Intimacy L	Intimacy H	Intimacy L
Males	.11	.36	.30	.34
Females	.22	.53**	.27	.62**

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

	Park		Bookshop	
	Intimacy H	Intimacy L	Intimacy H	Intimacy L
Males	-.66**	-.85**	-.78**	-.76**
Females	-.51*	-.70**	-.70**	-.58**

situations in which the subject would wait for less familiar female in either location, have no significant correlation coefficients between value scores and waiting scores.

Table 6 shows the correlation coefficients between anticipated frustration strength scores and value scores. All the cases have significantly negative correlation coefficients.

Discussion

The purpose of the present study was to investigate the effects of situational factors such as waiting place, the degree of intimacy with the object, and sex of the object on the waiting behavior of adolescents.

We attempted to interpret the results of the present study with the cognitive value evaluation model. This model assumes that the frustration that results from waiting makes subjects evaluate the value of the object as low. Then, subjects stop waiting when the value of the object is lower. We changed frustration into anticipated frustration in interpreting the results of the present study with the cognitive value evaluation model because we used hypothetical waiting situations.

A main effect of the waiting place factor was observed, supporting the hypothesis that the bookshop condition would have higher waiting scores. In the bookshop condition, it is easy to distract from waiting, resulting in weaker anticipated frustration than the park condition where it is difficult to distract from waiting. Thus, the bookshop condition yielded higher value of the object and higher waiting scores

than the park condition.

A main effect of the intimacy factor was also observed. The H condition had weaker anticipated frustration than the L condition. Furthermore, the H condition might originally have caused the object to be held at higher value. Thus, the H condition had higher value of object and consequently higher waiting scores, supporting the hypothesis.

We hypothesized that the sex of the object might affect the waiting scores. When the subjects wait for the female and male, the same degree of anticipated frustration may result. However, subjects (female) may evaluate the male more strictly than the female, resulting in waiting scores that would be higher for the female condition than for the male condition. However, this result was not observed. Further research is needed to better understand this discrepancy.

We performed an exploratory investigation of the interactions between waiting place, degree of intimacy, and sex of the object. The interaction effect between the degree of intimacy and sex of the object was significant. Regardless of sex, the H condition tended to have weaker anticipated frustration. Furthermore, regardless of sex, the object originally had higher value in the H condition. Thus, the H condition had higher value scores and consequently higher waiting scores than the L condition.

In the L condition, anticipated frustration was statistically the same for male and female objects. We hypothesized that subjects (female) might tend to evaluate the male more strictly than the female, so the female might trend towards having higher value than males, and this increased value could lead to higher waiting scores.

The interaction effects between the degree of intimacy, waiting place, and sex of the object were significant. In the case of the intimate male, anticipated frustration was weaker for the bookshop where there was distraction. The bookshop condition had higher values of the object than the park condition, leading to higher waiting scores.

In the case of the intimate female, the bookshop condition would be expected to have weaker anticipated frustration than the park condition due to distractions. However, even in the park condition where stronger anticipation frustration was expected, the value placed on the object was not as low for the female, perhaps because subjects might not evaluate the female as strictly in the park condition. This eliminates the difference between the park and bookshop conditions.

When the subjects waited for a female with whom they are less

familiar, the bookshop condition had weaker anticipated frustration than the park and the object was thus more highly valued. Therefore, the bookshop condition had higher waiting scores than the park condition when the subjects waited for a less familiar female.

When the subjects waited for a less familiar male, the bookshop condition still had weaker anticipated frustration. However, because subjects evaluated the male strictly, the value placed on the object was low, thus removing the difference in waiting scores between locations for the less intimate male.

The H condition could have higher waiting scores for either sex of the object and for either location. In these conditions, the high intimacy condition had weaker anticipated frustration, and the object was assumed to have higher original value. Thus, the high intimacy condition had the higher value of object and consequently the higher waiting scores.

In the park condition, there was no difference in waiting scores between intimate males and females. Subjects do not anticipate a high level of frustration, because they are waiting for an intimate male or female. Because the male is an intimate friend, the value scores were originally high and were not lowered much despite the subjects evaluating the male more strictly than the female. Thus, in the park condition, there was no difference in the waiting scores between intimate males and females. The same reasoning applied to the bookshop location, where anticipated frustration was lower than in the park condition.

There may be no significant difference in the level of anticipated frustration between less intimate males and females in the bookshop. However, if subjects evaluate the male more strictly, the waiting scores would be higher for the less intimate female.

In the park, when subjects waited for the less intimate person, they anticipate stronger frustration, lowering the value of both male and female objects. This could explain why there is no difference in waiting scores for this set of conditions.

The cognitive value evaluation model also provided hypotheses concerning the correlations between scores. All situations except the situation of waiting for an intimate female in the bookshop have low correlation coefficients between anticipated frustration scores and waiting scores. Additionally, the correlation coefficients were low between value scores and waiting scores in all situations except for the

two situations where subjects waited for the less familiar female. All conditions had significant negative correlations between anticipated frustration strength scores and value scores.

Thus, the cognitive value evaluation model was partially supported. Further refinement will be necessary to understand some of the discrepancies. In conclusion, situational factors influence waiting behavior in adolescents, but the interactions between factors are not fully clarified.

Study 2

Study 2 further investigated the effects of situational factors on the waiting behavior of adolescents, focusing on waiting time, waiting place, and the reason for being late as the situational factors.

The following hypothesis was set on the basis of the cognitive value evaluation model. The cognitive value evaluation model assumes that the frustration that results from waiting makes the subjects lower their evaluation of the value of the object. Then, subjects stop waiting when they evaluate the value of the object to be lower. We changed the frustration into the anticipated frustration, because we use the hypothetical waiting situation.

An effect of the reason for being late might be observed. In the present study, the two reasons for being late consist of the oversleeping condition and the late train condition. In the oversleeping condition, the reason why the object is late is due to oversleeping. In the late train condition, the reason why the object is late is due to an unexpected accident that delays the train that the object is taking to meet the subject.

Subjects might anticipate weaker frustration for the late train condition than for the oversleeping condition. Furthermore, even if the late train and oversleeping conditions have the same degree of anticipated frustration, the late train condition may not cause subjects to evaluate the value of the object lower, because the reason for being late is not the fault of the object. Thus, the value of the object might be higher for the late train condition than the oversleeping condition. Therefore, it was hypothesized that the late train condition would have higher waiting scores than the oversleeping condition.

Effects of waiting time may also be observed. The longer the waiting time is, the stronger the anticipated frustration is. The stronger

the anticipated frustration is, the lower value scores are. Furthermore, the lower value scores are, the lower the waiting scores are. Thus, it is hypothesized that waiting time influence the waiting behavior.

As shown in Study 1, there may also be an effect of waiting place. The bookshop with many distractions should have weaker anticipated frustration than the park where there are few distractions. Thus, the bookshop condition might have higher value scores. Therefore, it is hypothesized that bookshop condition has the higher waiting scores than park condition.

Regarding the relationships between anticipated frustration strength, value of the object, and waiting behavior, the following hypotheses are set on the basis of the cognitive value evaluation model. There should be negative correlation coefficients between anticipated frustration scores and value scores and between anticipated frustration scores and waiting scores. There should be positive correlation coefficients between value scores and waiting scores. In the relationship between the values scores and the anticipated frustration scores, there might be slight decrement of the value scores in the late train condition when the anticipated frustration increase even if the reason for being late is the lateness of train, though the oversleeping condition has larger decrement of the value scores. Therefore, there should be negative correlation between anticipated frustration scores and value scores in the even late train condition.

The purpose of Study 2 was to manipulate situational factors such as waiting place, waiting time, and the reason for being late to investigate the effects on waiting behavior in adolescents.

Methods

The experimental design was a $2 \times 2 \times 3$ factorial design. The first factor was the reason why the object was late and consisted of the late train condition, in which the reason for being late was due to an unexpected accident, and the oversleeping condition. The second factor was the waiting place, consisting of the park condition with few distractions from waiting and the bookshop condition with many distractions. The third factor was waiting time and consisted of three levels: 5 min, 30 min, and 60 min. These factors were included in all analyses as within subject factors.

Subjects: Twenty-two 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 subjects could freely browse and read while waiting.

The basic form of the hypothetical waiting situations was described as follows. "You are meeting a familiar female at a specific place (park or bookshop). (Five, thirty, or sixty) minutes have elapsed. However, the female (object) still has not come (because of the lateness of train or oversleeping)." The information concerning the waiting place, waiting time and the reason why the object is late were written in the gothic style.

Subjects rated the anticipated frustration strength, the value of the object, and waiting behavior in each hypothetical waiting situation. The anticipated frustration strength was rated on a seven-point scale. The questionnaire item was as follows. "How much would you experience *iraira* (the Japanese word for frustration) if you were kept waiting for (five minutes, thirty minutes, sixty minutes) in the (bookshop or park) by a familiar female because of (the lateness of train or oversleeping)? Please anticipate."

Next, the value of the object was rated on a seven-point scale. The questionnaire item was as follows. "How much would you dislike the familiar female for having you wait for (five minutes, thirty minutes or sixty minutes) in the (bookshop or park) because of (oversleeping or the lateness of train)?"

Finally, subjects rated waiting behavior, using the original three-point scale (wait, unknown, not wait). The questionnaire item was as follows. "Would you wait any longer for the familiar female even though you are kept waiting for (five minutes, thirty minutes or sixty minutes) in the (bookshop or park) because of (the lateness of train or oversleeping)?"

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

Results

Table 7 shows the mean waiting scores in each condition. An ANOVA was performed using the waiting scores as the dependent variable. The main effects of reason ($F=8.49$, $df=1/21$, $p<0.01$) and waiting time ($F=27.2$, $df=2/42$, $p<0.01$) were significant. The interaction effects between the waiting place and reason ($F=7.45$, $df=1/21$, $p<0.05$)

Table 7 The mean waiting scores for each condition

	Oversleeping		The late train	
	Park	Bookshop	Park	Bookshop
Five minutes	3.00 (0.00)	3.00 (0.00)	3.00 (0.00)	2.96 (0.20)
Thirty minutes	2.72 (0.54)	2.90 (0.28)	2.95 (0.21)	2.96 (0.20)
Sixty minutes	2.09 (0.79)	2.18 (0.78)	2.54 (0.58)	2.36 (0.71)

and between reason and waiting time ($F=4.70$, $df=2/42$, $p<0.05$) were significant.

The main effect of the waiting time was analyzed. Waiting scores were higher in the 5-min and 30-min conditions than in the 60-min condition (5 min; $t=6.83$, $df=42$, $p<0.01$; 30 min; $t=5.82$, $df=42$, $p<0.01$).

The interaction effect between waiting place and reason was analyzed. The simple main effect of the reason was analyzed for each waiting place condition. The results indicated that the simple main effect of the reason was significant for the park condition ($F=15.31$, $df=1/42$, $p<0.01$) and that the late train condition had higher waiting scores than the oversleeping condition. The simple main effect of the waiting place was analyzed for each reason condition. The results indicated that the simple main effect of the waiting place approached a significant level ($F=2.84$, $df=1/42$, $0.05<p<0.10$) for the oversleeping condition and that the bookshop condition had higher waiting scores than the park condition.

The simple main effect of reason was also analyzed for each waiting time condition. The results indicated that the simple main effect of reason approached the significant level for the 30-min condition ($F=2.83$, $df=1/63$, $0.05<p<0.10$) and the late train condition had the higher waiting scores than the oversleeping condition. The results also indicated that the simple main effect of the reason was significant for the 60-min condition ($F=15.4$, $df=1/63$, $p<0.01$) and that the late train condition had higher waiting scores.

The simple main effect of the waiting time was analyzed for each reason condition, and was significant for both (late train, $F=13.04$, $df=2/84$, $p<0.01$; oversleeping, $F=30.97$, $df=2/84$, $p<0.01$). For the late train condition, the 5- and 30-min conditions had higher waiting scores than the 60-min condition (5 min; $t=4.52$, $df=84$, $p<0.01$; 30 min; $t=4.32$, $df=84$, $p<0.01$). For the oversleeping condition, the 5-min and 30-min conditions

Table 8 The mean anticipated frustration strength scores for each condition

	Oversleeping		The late train	
	Park	Bookshop	Park	Bookshop
Five minutes	2.40 (1.50)	2.05 (1.11)	1.50 (0.72)	1.90 (1.20)
Thirty minutes	4.04 (1.69)	3.50 (1.65)	2.77 (1.54)	2.77 (1.28)
Sixty minutes	5.27 (1.39)	4.91 (1.65)	3.86 (1.55)	4.05 (1.58)

also had higher waiting scores than the 60-min condition (5 min; $t=7.46$, $df=84$, $p<0.01$; 30 min; $t=5.89$, $df=84$, $p<0.01$).

Table 8 shows the mean strength of the anticipated frustration for each condition. An ANOVA was performed using the strength of the anticipated frustration as the dependent variable. The main effects of reason ($F=42.04$, $df=1/21$, $p<0.01$) and waiting time ($F=91.34$, $df=2/42$, $p<0.01$) were significant. The 60-min condition had stronger anticipated frustration than the 5-min and 30-min condition (5 min; $t=13.52$, $df=42$, $p<0.01$; 30 min; $t=6.61$, $df=42$, $p<0.01$) and that the 30-min condition had stronger anticipated frustration than the 5-min condition ($t=6.91$, $df=42$, $p<0.01$).

The interaction effect between waiting place and reason ($F=9.09$, $df=1/21$, $p<0.01$) was significant. Therefore, the simple main effect of the waiting place was analyzed for each reason condition. The simple main effect of the waiting place was significant ($F=8.06$, $df=1/42$, $p<0.01$) for the oversleeping condition; the park condition had stronger anticipated frustration than the bookshop condition ($F=8.06$, $df=1/42$, $p<0.01$). The simple main effect of the reason was analyzed for each waiting place condition. The results indicated that the simple main effect of reason was significant for both the park condition ($F=48.89$, $df=1/42$, $p<0.01$) and bookshop condition ($F=11.31$, $df=1/42$, $p<0.01$). The oversleeping condition had stronger anticipated frustration than the late train condition for these waiting place conditions.

The interaction effects between reason and waiting time approach the significant level. The simple main effect of the waiting time was analyzed for each reason condition (oversleeping condition, $F=78.2$, $df=2/84$, $p<0.01$; the late train condition, $F=48.2$, $df=2/84$, $p<0.01$). The results indicated that the 5-and 30-min conditions had weaker anticipated

Table 9 The mean value scores for each condition

	Oversleeping		The late train	
	Park	Bookshop	Park	Bookshop
Five minutes	4.90 (1.54)	5.23 (1.20)	5.54 (1.20)	5.36 (1.40)
Thirty minutes	4.18 (1.47)	4.59 (1.44)	5.05 (1.30)	5.04 (1.30)
Sixty minutes	3.45 (1.64)	3.41 (1.56)	4.45 (1.53)	4.41 (1.47)

frustration than the 60-min condition for the oversleeping condition (5 min, $t=12.5$, $df=84$, $p<0.01$; 30 min, $t=5.76$, $df=84$, $p<0.01$). The 5-min condition also had weaker anticipated frustration than the 30-min condition ($t=6.74$, $df=84$, $p<0.01$).

For the late train condition, the 5-and 30-min conditions had weaker anticipated frustration than the 60-min condition (5 min, $t=9.81$, $df=84$, $p<0.01$; 30 min, $t=5.16$, $df=84$, $p<0.01$). The 5-min condition also had weaker anticipated frustration than the 30-min condition ($t=4.67$, $df=84$, $p<0.01$).

The simple main effects of the reason were analyzed for each waiting time condition, and were found to be significant for all three (5 min, $F=6.66$, $df=1/63$, $p<0.05$; 30 min, $F=24.4$, $df=1/63$, $p<0.01$; 60 min, $F=31.5$, $df=1/63$, $p<0.01$).

Table 9 shows the mean value placed on the object for each condition. An ANOVA was performed using the value placed on the object as the dependent variable. The main effect of the reason ($F=36.52$, $df=1/21$, $p<0.01$) and waiting time ($F=35.34$, $df=2/42$, $p<0.01$) were significant. The main effect of the waiting time was analyzed. The 5-min condition had higher values of the object than either the 30-or 60-min conditions (30 min; $t=3.43$, $df=42$, $p<0.01$; 60 min; $t=8.36$, $df=42$, $p<0.01$) and the 30-min condition had higher values than the 60-min condition ($t=4.93$, $df=42$, $p<0.01$).

The interaction effect between reason and waiting time ($F=4.99$, $df=2/42$, $p<0.05$) was also significant. The simple main effect of reason was significant for all three waiting time conditions (5 min; $F=5.89$, $df=1/63$, $p<0.05$; 30 min; $F=17.12$, $df=1/63$, $p<0.01$; 60 min; $F=39.42$, $df=1/63$, $p<0.01$). The value placed on the object was higher for the late train condition than for the oversleeping condition in all time conditions.

The simple main effect of waiting time was analyzed for each reason condition. The 5-min condition had higher values of the object

than the 30-min and 60-min conditions for each reason condition (oversleeping: 30 min, $t=3.66$, $df=84$, $p<0.01$; 60 min, $t=8.78$, $df=84$, $p<0.01$; the late train: 30 min, $t=2.19$, $df=84$, $p<0.05$; 60 min, $t=5.49$, $df=84$, $p<0.01$) and the 30-min condition had higher values of the object than the 60-min condition for each reason condition (oversleeping: $t=5.12$, $df=84$, $p<0.01$; the late train: $t=3.29$, $df=84$, $p<0.01$).

Table 10 shows the correlation coefficients between anticipated frustration scores and waiting scores. Significant correlation coefficients between anticipated frustration strength scores and waiting scores were not observed in the bookshop conditions in which subjects are kept waiting for 30 or 60 min because of oversleeping. The significant correlation coefficients were also not observed in the bookshop conditions in which subjects are kept waiting for 5 or 30 min because of the lateness of train. However, significant correlations were observed in the anticipated direction for all conditions except those described above.

Table 11 shows the correlation coefficients between anticipated frustration scores and value scores. For all conditions, significant correlations were observed in the predicted direction.

Table 12 shows the correlation coefficients between value scores and waiting scores. No significant correlations were seen for the bookshop condition in which subjects are kept waiting for 30 or 60 min because of oversleeping. No significant correlations were observed for the bookshop conditions in which subjects are kept waiting for 5 or 30

Table10 The correlation coefficients between anticipated frustration strength scores and waiting scores

	Oversleeping		The late train	
	Park	Bookshop	Park	Bookshop
Five minuites	/	/	/	.16
Thirty minuites	-.53*	-.19	/	-.38
Sixty minutes	-.43*	-.27	-.57**	-.59**

Table 11 The correlation coefficients between the anticipated frustration strength scores and value scores

	Oversleeping		The late train	
	Park	Bookshop	Park	Bookshop
Five minutes	-.81**	-.65**	-.57**	-.68**
Thiry minutes	-.86**	-.76**	-.79**	-.79**
Sixty minutes	-.85**	-.81**	-.87**	-.92**

Table 12 The correlation coefficients between value scores and waiting scores

	Oversleeping		The late train	
	Park	Bookshop	Park	Bookshop
Five minutes	/	/	/	-.25
Thirty minutes	.52*	.02	/	.34
Sixty minutes	.35	.31	.38	.56**

min because of the lateness of train. Finally, no significant correlation was observed for the park conditions in which subjects are kept waiting for 60 min because of oversleeping or the lateness of train. For all other conditions, the observed correlations were significant in the anticipated direction.

Discussion

We investigated the effects of the reason for being late on the waiting behavior of adolescents. We focused on oversleeping and a lateness of train as the reasons for being late. In the oversleeping condition, the reason for lateness was due to the object for whom subjects are waiting. In the late train condition, the reason for lateness could be attributed to an unexpected accident.

A main effect of the reason for being late on the waiting behavior was observed. This result was interpreted with the cognitive value evaluation model. This model assumes that the frustration that results from waiting makes subjects evaluate the value of the object as low, and then subjects stop waiting when the value of the object is lower. We changed the frustration into the anticipated frustration in interpreting the results with cognitive value evaluation model, because we used the hypothetical waiting situation.

The late train condition had weaker anticipated frustration than the oversleeping condition. Furthermore, the late train condition did not cause the value of the object to be lower even for the same strength of anticipated frustration as the oversleeping condition. This may be due to the causality; in the late train condition, the reason the object is late is external, not due to the object. Therefore, the late train condition had higher values of the object and higher waiting scores than the oversleeping condition, supporting the hypothesis.

A main effect of the waiting time was observed and could be

interpreted with the cognitive value evaluation model. Even the 30-min condition did not have very strong anticipated frustration, although the anticipated frustration was stronger for the 30-min condition than for the 5-min condition. Thus, even the 30-min condition had high values of the object, and therefore, there was no significant difference in the waiting scores between the 5- and 30-min conditions.

The 5- and 30-min conditions had higher waiting scores than the 60-min condition. This result was interpreted with the cognitive value evaluation model as follows. The 60-min condition had stronger anticipated frustration than the shorter times, leading to higher values of the object in the 5- and 30-min conditions. Consequently, the 5- and 30-min conditions had higher waiting scores than the 60-min condition. Therefore, the hypothesis was supported.

The hypothesis that the waiting place influences the waiting behavior was set. The bookshop with many distractions from waiting would cause weaker anticipated frustration than the park where it is difficult to distract from waiting. Thus, the value of the object should be higher for the bookshop condition and the waiting scores should also be higher. However, this hypothesis was not supported. Further research is needed to better understand this result.

Our exploratory analysis revealed an interaction between waiting place and the reason for being late. In the park, the late train condition did not have stronger anticipated frustration than the oversleeping condition. Furthermore, the late train condition did not cause subjects to lower the evaluation of the object's value even for the same strength of frustration as the oversleeping condition, because in the late train condition, the reason for lateness is external to the object. Thus, in the park condition the late train condition had the higher value of object and higher waiting scores than the oversleeping condition.

However, in the bookshop where it is easy to distract oneself from waiting, even the oversleeping condition might not anticipate much stronger frustration, though the oversleeping condition had relatively stronger anticipated frustration than the late train condition. Even in the oversleeping condition, the object was placed at fairly high value. Therefore, in the bookshop with many distractions, there was no difference in waiting scores between the oversleeping condition and the late train condition.

In the late train condition, even the park condition where it is difficult to distract oneself from waiting did not have strong anticipated

frustration. Thus, even in the park condition, the object was placed at fairly high value and, in the late train condition, there was no difference in waiting scores between the two location conditions.

On the other hand, in the oversleeping condition, the park condition had stronger anticipated frustration than the bookshop condition. Therefore, for the oversleeping conditions, the bookshop condition showed higher values placed on the object and had higher waiting scores than the park condition.

An interaction effect between the reason for being late and waiting time was observed. In the 5-min condition, even the oversleeping condition had weak anticipated frustration, even though the oversleeping condition had stronger anticipated frustration than the late train condition. Thus, even the oversleeping condition did not lower the value of the object very much. Therefore, in the 5-min condition, there was no difference in waiting scores between the two reasons for lateness.

However, in the 30-and 60-min conditions, the oversleeping condition caused stronger anticipated frustration. Furthermore, the late train condition did not lower the evaluated value of the object, because in the late train condition the reason for lateness was not the fault of object.

Therefore, the late train condition had higher values placed on the object than the oversleeping condition. Consequently, the late train condition had higher waiting scores than the oversleeping condition in the longer waiting time conditions.

A hypothesis concerning the relationship between anticipated frustration strength, value placed on the object, and waiting behavior was set on the basis of the cognitive value evaluation model. In the relationship between value scores and anticipated frustration scores, there might be slight decrement of the value scores in the even late train condition when the anticipated frustration increase even if the reason for being late is the lateness of train, though the oversleeping condition has larger decrement of the value scores. Therefore, there should be negative correlation between anticipated frustration scores and value scores in the even late train condition.

No significant correlations between value scores and waiting scores were observed in the bookshop condition in which subjects are kept waiting for 30 or 60 min because of oversleeping. There was also no correlation between value scores and waiting scores in the park condition when subjects are kept waiting for 60 min because of oversleeping. or the lateness of train. Additionally, there were no

correlations between anticipated frustration strength and waiting scores for shorter waiting times in the bookshop condition because of the lateness of train. Furthermore, there were no correlation between anticipated frustration strength and waiting scores for the longer waiting times in the bookshop because of oversleeping.

Therefore, the cognitive value evaluation model was partially supported. Further refinement will be necessary to understand some of the discrepancies.

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