

Effects of the degree of economic richness and the degree of affection on future time image

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本研究の目的は経済的な豊かさと愛情の度合いが未来イメージに及ぼす効果を検討することであった。女子大学生が本研究に参加した。女子大学生は経済的な豊かさの度合い（高、中、低）と愛情の度合い（高、中、低）を操作することによってセットされた9つの仮想場面の下で、未来イメージ尺度に回答した。主な結果は以下の通りであった。

（1）経済的な豊かさと愛情の度合いはともに未来イメージに影響を与えた。（2）影響の仕方は未来イメージの種類によって様々であった。

キーワード；未来イメージ、経済的な豊かさ、愛情の度合い、女子大学生

Future time perspective (FTP) is defined as the totality of an individual's view of his or her psychological future at a given time. Nurmi (1991) stressed that this concept is particularly important for young people for several reasons. First, a well-structured and extended FTP is characteristic of a well-adapted personality and allows for activities that are highly valued in modern society, such as delay of gratification, planning, problem solving, and achievement. Second, problem behaviors for adolescents, such as delinquency, difficulty with career choice, and drug use, are likely to be related to how young people perceive their future. Third, an adolescent's perception of the future plays an important role in their identity formation, which is often defined in terms of exploration and commitment concerning future-oriented interests.

FTP has three aspects: (1) cognitive, (2) affective, and (3) beliefs. The cognitive aspect includes future extension, future orientation, content of FTP, and density and degree of structuration of future events. The affective aspect refers to hopefulness and future image. The belief aspect refers to belief about the future, especially the extent to which people believe they are able to influence and control their own future.

Previous studies have investigated the relationship between social class and FTP. Adolescents classified as being in the middle class had longer future extension than those classified as being in the lower class (Brim & Forer, 1956, Kendall & Sibley, 1970, Leshan, 1952). These findings suggest that economic richness plays an important role in

FTP formation.

In addition, the degree of affection might also play an important role in FTP formation. Mitsutomi and Kobayashi found that a high degree of social support was related to a stronger feeling of hopefulness, more future orientation, and a weaker sense of external control. Mitsutomi & Hori (2017) also found that a high degree of social support related to the positive future image.

However, to our knowledge, no study has investigated the influence of both the degree of economic richness and the degree of affection. The previous study examined an index of economic richness and social support as personal variables. In the present study, we manipulated both the degree of economic richness and the degree of affection as situational variables. Then, in hypothetical situations established by manipulating the degree of economic richness and the degree of affection, participants responded to the FTP scale, for which the future time image scale was used. With this background, the purpose of the present study was to investigate the effects of the degree of economic richness and the degree of affection on future time image.

Methods

Participants: In total, 27 female university students participated in the present study.

Experimental design: Nine hypothetical situations were set by manipulating the degree of economic richness (high, middle, low) and the degree of affection given by the others (high, middle, low). These nine hypothetical situations are detailed in Note 1.

Scale: The future time image scale, i.e., scale that focuses on future of time image scale devised by Tsuzuki (1993), which contains 20 adjective pairs, was used. All participants responded to these adjective pairs on a five-point scale.

Procedure: The participants responded to the future time image scale after imagining each situation set by manipulating the degree of economic richness and the degree of affection given by the others.

Results

Table 1 shows the results of future time image scales. A 3 (economic richness) \times 3 (affection) analysis of variance (ANOVA) was performed using each future time image scale as a dependent variable.

A 3 (economic richness) \times 3 (affection) ANOVA was also performed using the pleasure score as the dependent variable. The main effects of economic richness ($F=23.4$, $df=2/52$, $p<.01$) and affection ($F=130.48$, $df=2/52$, $p<.01$) were significant. Regarding the

	<u>Economic richness H</u>			<u>Economic richness M</u>			<u>Economic richness L</u>		
	Affection H	Affection M	Affection L	Affection H	Affection M	Affection L	Affection H	Affection M	Affection L
Pleasure	4.48 (0.57)	3.18 (0.86)	1.59 (0.95)	4.07 (0.72)	3.03 (0.92)	1.56 (0.96)	3.22 (0.99)	2.48 (1.07)	1.11 (0.42)
Fulfillment	4.29 (0.71)	3.37 (0.91)	1.56 (0.63)	4.00 (0.82)	3.04 (1.04)	1.52 (0.63)	3.15 (1.05)	2.48 (0.91)	1.15 (0.52)
Beatifulness	3.78 (0.79)	3.29 (0.71)	1.77 (0.88)	3.89 (0.74)	2.96 (0.92)	1.59 (0.68)	3.14 (0.85)	2.37 (0.99)	1.15 (0.45)
Attractiveness	4.15 (0.71)	3.2 (0.79)	1.74 (0.80)	3.78 (0.83)	3.19 (0.98)	1.52 (0.57)	3.15 (1.11)	2.44 (0.99)	1.11 (0.42)
Warmfulness	3.93 (0.77)	3.15 (0.97)	1.52 (0.69)	4.11 (1.03)	3.26 (1.00)	1.67 (0.77)	3.63 (1.06)	2.67 (1.02)	1.07 (0.26)
lighttness	4.22 (0.68)	3.22 (0.96)	1.63 (0.72)	4.04 (1.04)	3.15 (0.93)	1.67 (0.67)	3.52 (1.07)	2.48 (0.92)	1.15 (0.45)
Hopefulness	4.22 (0.88)	3.18 (0.81)	1.74 (0.75)	3.78 (1.03)	2.93 (0.94)	1.63 (0.68)	3.30 (1.15)	2.33 (0.86)	1.14 (0.45)
fastness	3.37 (0.87)	3.11 (0.63)	2.00 (1.02)	3.70 (0.94)	2.93 (0.77)	1.96 (0.79)	3.07 (0.90)	2.44 (0.83)	1.33 (0.72)
Eariness	3.37 (0.87)	3.00 (0.77)	1.93 (0.81)	3.67 (1.05)	2.74 (0.75)	1.78 (0.74)	2.82 (0.94)	2.22 (0.88)	1.19 (0.55)
Nearness	3.11 (0.79)	3.04 (0.74)	1.93 (0.86)	3.74 (0.97)	3.00 (0.86)	2.04 (0.84)	2.96 (0.88)	2.56 (0.74)	1.52 (0.83)
limportance	3.40 (0.62)	2.96 (0.69)	2.30 (1.01)	3.82 (0.98)	2.96 (0.79)	2.03 (0.79)	3.11 (0.74)	2.59 (0.73)	1.56 (0.92)
Length	3.41 (0.62)	3.11 (0.63)	2.19 (0.82)	3.56 (0.96)	3.00 (0.72)	2.11 (0.88)	3.00 (0.67)	2.67 (0.72)	1.51 (0.83)
bigness	3.44 (0.63)	3.11 (0.63)	2.19 (0.82)	3.52 (1.00)	2.85 (0.76)	2.00 (0.77)	3.04 (0.69)	2.59 (0.73)	1.67 (0.94)
Goodness	4.04 (0.58)	3.11 (0.79)	1.78 (0.69)	3.82 (1.02)	2.96 (0.79)	1.81 (0.77)	2.89 (0.88)	2.44 (0.83)	1.19 (0.55)
Changfulness	3.22 (0.83)	3.07 (0.77)	1.96 (1.04)	3.85 (0.93)	2.93 (0.86)	1.63 (0.67)	3.26 (1.08)	2.33 (0.86)	1.19 (0.55)
Clearness	3.15 (0.89)	3.07 (0.77)	1.82 (0.86)	3.56 (0.96)	2.89 (0.83)	1.70 (0.71)	3.07 (0.86)	2.37 (0.87)	1.11 (0.41)
Stableness	4.07 (0.86)	3.07 (0.77)	1.70 (0.85)	3.59 (1.03)	2.89 (0.79)	1.63 (0.62)	2.59 (0.78)	2.33 (0.86)	1.11 (0.42)
Openness	3.70 (0.90)	3.00 (0.77)	1.77 (0.88)	3.74 (0.93)	2.82 (0.77)	1.63 (0.68)	2.89 (0.88)	2.30 (0.85)	1.18 (0.54)
vividness	3.93 (0.94)	2.96 (0.92)	1.74 (0.75)	3.78 (0.92)	2.92 (0.86)	1.67 (0.67)	3.15 (0.93)	2.37 (0.99)	1.18 (0.55)
Activeness	3.37 (1.02)	2.89 (0.88)	1.82 (0.86)	3.78 (0.92)	2.93 (0.94)	1.78 (0.83)	3.30 (0.97)	2.26 (0.89)	1.26 (0.64)

economic richness, scores were significantly higher for the high and middle compared with the low condition (high, $t=6.55$, $df=81$, $p<.01$; $t=4.97$; middle, $t=4.97$, $df=81$, $p<.01$). Regarding affection, scores were significantly higher for the high than for the middle and low conditions (middle, $t=6.58$, $df=52$, $p<.01$; low, $t=16.06$, $df=52$, $p<.01$), and were significantly higher for the middle than for the low condition ($t=9.49$, $df=52$, $p<.01$).

The interaction effect between economic richness and affection approached significance ($F=2.27$, $df=.4/104$, $p=.06$). The simple main effect of economic richness was then assessed for each affection condition. As a result, the simple main effect of economic richness was found to be significant for all three affection conditions (high affection, $F=21.10$, $df=2/156$, $p<.01$; middle affection, $F=7.04$, $df=2/156$, $p<.01$; low affection, $F=3.67$, $df=2/156$, $p<.05$).

In the high affection condition, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=6.37$, $df=156$, $p<.01$; middle economic richness, $t=4.31$, $df=156$, $p<.01$), and for the high compared with the middle economic richness condition ($t=2.05$, $df=156$, $p<.05$). For the middle and low affection conditions, scores were significantly higher for the high and middle than for the low economic richness condition (middle affection, high economic richness, $t=3.55$, $df=156$, $p<.01$; middle affection, middle economic richness, $t=2.80$, $df=156$, $p<.01$; low affection, high economic richness, $t=2.43$, $df=156$, $p<.01$; low affection, middle economic richness, $t=2.24$, $df=156$, $p<.05$).

Next, the simple main effect of affection was assessed for each economic richness condition. The simple main effect of affection was significant for all economic richness conditions (high economic richness, $F=87.19$, $df=2/156$, $p<.01$; middle economic richness, $F=66.72$, $df=2/156$, $p<.01$; low economic richness, $F=47.7$, $df=2/156$, $p<.01$). In all economic richness conditions, scores were significantly higher for the high and middle than for the low affection condition (high economic richness, high affection, $t=13.18$, $df=156$, $p<.01$; high economic richness, middle affection, $t=7.26$, $df=156$, $p<.01$; middle economic richness, high affection, $t=11.49$, $df=156$, $p<.01$; middle richness, middle affection, $t=6.76$, $df=156$, $p<.01$; low economic richness, high affection, $t=9.63$, $df=156$, $p<.01$; low economic richness, middle affection, $t=6.25$, $df=156$, $p<.01$), and for the high compared with the middle affection condition (high economic richness, $t=5.92$, $df=156$, $p<.01$; middle economic richness, $t=4.73$, $df=156$, $p<.01$; low economic richness, $t=3.38$, $df=156$, $p<.01$).

A 3 (economic richness) \times 3 (affection) ANOVA was then performed using fulfillment scores as the dependent variable. The main effects of economic richness ($F=22.92$,

df=2/52, $p < .01$) and affection ($F=114.97$, $df=2/52$, $p < .01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=6.55$, $df=52$, $p < .01$; middle economic richness, $t=4.76$, $df=52$, $p < .01$). Regarding the affection condition, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=14.95$, $df=52$, $p < .01$; middle affection, $t=9.66$, $df=52$, $p < .01$), and for the high compared with the middle affection condition ($t=5.29$, $df=52$, $p < .01$).

The interaction effect between economic richness and affection was significant ($F=2.79$, $4/104$, $p < .01$). Next, the simple main effect of economic richness was assessed for each affection condition. The simple main effect of economic richness was significant for the high and middle affection conditions (high affection, $F=21.22$, $df=2/156$, $p < .01$; middle affection, $F=12.04$, $df=2/156$, $p < .01$). In the low affection condition, the simple main effect of economic richness approached significance ($F=3.03$, $df=2/156$, $.05 < p < .10$). Under all affection conditions, scores were significantly higher for the high and middle than for the low economic richness condition (high affection, high economic richness, $t=6.27$, $df=156$, $p < .01$; high affection, middle economic richness, $t=4.65$, $df=156$, $p < .01$; middle affection, high economic richness, $t=4.85$, $df=156$, $p < .01$; middle affection, middle economic richness, $t=3.03$, $df=156$, $p < .01$; low affection, high economic richness, $t=2.23$, $df=156$, $p < .01$; low affection, middle economic richness, $t=2.02$, $df=156$, $p < .05$).

The simple main effects of affection were significant for all economic richness conditions (high economic richness, $F=88.49$, $df=2/156$, $p < .01$; middle economic richness, $F=71.25$, $df=2/156$, $p < .01$; low economic richness, $F=47.21$, $df=2/156$, $p < .01$). Under all economic richness conditions, scores were significantly higher for the high and middle than for the low affection condition (high economic richness, high affection, $t=13.08$, $df=156$, $p < .01$; high economic richness, middle affection, $t=8.65$, $df=156$, $p < .01$; middle economic richness, high affection, $t=11.83$, $df=156$, $p < .01$; middle economic richness, middle affection, $t=7.24$, $df=156$, $p < .01$; low economic richness, high affection, $t=9.54$, $df=156$, $p < .01$; low economic richness, middle affection, $t=6.36$, $df=156$, $p < .01$), and for the high compared with the middle affection condition (high economic richness, $t=4.41$, $df=156$, $p < .01$; middle economic richness, $t=4.59$, $df=156$, $p < .01$; low economic richness, $t=3.18$, $df=156$, $p < .01$).

A 3 (economic richness) \times 3 (affection) ANOVA was then performed using beautifulness as the dependent variable. The main effects of economic richness ($F=18.63$, $df=2/52$, $p < .01$) and affection ($F=104.89$, $df=2/52$, $p < .01$) were significant. Scores were

significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=5.74$, $df=52$, $p<.01$; middle economic richness, $t=4.57$, $df=52$, $p<.01$). Scores were also significantly higher for the high and middle than for the low affection condition (high affection, $t=14.26$, $df=52$, $p<.01$; middle affection, $t=9.31$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=4.95$, $df=52$, $p<.01$).

A 3 (economic richness) \times 3 (affection) ANOVA was also performed using attractiveness as the dependent variable. The main effects of economic richness ($F=25.30$, $df=2/52$, $p<.01$) and affection ($F=123.08$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=6.85$, $df=52$, $p<.01$; middle economic richness, $t=5.06$, $df=52$, $p<.01$).

Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=15.40$, $df=52$, $p<.01$; middle affection, $t=10.29$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=5.10$, $df=52$, $p<.01$).

A 3 (economic richness) \times 3 (affection) ANOVA was then performed using warmth as the dependent variable. The main effects of economic richness ($F=7.24$, $df=2/52$, $p<.01$) and affection ($F=138.04$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=2.69$, $df=52$, $p<.01$; middle economic richness, $t=3.67$, $df=52$, $p<.01$). Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=16.37$, $df=p<.01$; middle affection, $t=10.54$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=5.73$, $df=52$, $p<.01$).

A 3 (economic richness) \times 3 (affection) ANOVA was then performed using lightness as the dependent variable. The main effects of economic richness ($F=12.91$, $df=2/52$, $p<.01$) and affection ($F=141.94$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=4.64$, $df=52$, $p<.01$; middle economic richness, $t=4.10$, $df=52$, $p<.01$). Regarding affection, scores were significantly for the high and middle than for the low affection condition (high affection, $t=16.73$, $df=52$, $p<.01$; middle affection, $t=10.05$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=6.67$, $df=52$, $p<.01$).

Next, a 3 (economic richness) \times 3 (affection) ANOVA was performed using hopefulness

as the dependent variable. The main effects of economic richness ($F=19.15$, $df=2/52$, $p<.01$) and affection ($F=90.67$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=6.09$, $df=52$, $p<.01$; middle economic richness, $t=3.99$, $df=52$, $p<.01$), and for the high compared with the middle economic richness condition ($t=2.09$, $df=52$, $p<.05$). Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=13.41$, $df=52$, $p<.01$; middle affection, $t=7.77$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=5.64$, $df=52$, $p<.01$).

Next, a 3 (economic richness) \times 3 (affection) ANOVA was performed using fastness as the dependent variable. The main effects of economic richness ($F=14.48$, $df=2/52$, $p<.01$) and affection ($F=57.20$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=4.50$, $df=52$, $p<.01$; middle economic richness, $t=4.81$, $df=52$, $p<.01$). Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=10.52$, $df=52$, $p<.01$; middle affection, $t=6.91$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=3.62$, $df=52$, $p<.01$).

A 3 (economic richness) \times 3 (affection) ANOVA was then performed using easiness as the dependent variable. The main effects of economic richness ($F=19.81$, $df=2/52$, $p<.01$) and affection ($F=62.41$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=5.59$, $df=52$, $p<.01$; middle economic richness, $t=5.30$, $df=52$, $p<.01$). Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=11.07$, $df=52$, $p<.01$; middle affection, $t=6.85$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=4.21$, $df=52$, $p<.01$).

A 3 (economic richness) \times 3 (affection) ANOVA was also performed using nearness as the dependent variable. The main effects of economic richness ($F=8.54$, $df=2/52$, $p<.01$) and affection ($F=54.0$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=2.45$, $df=52$, $p<.05$; middle economic richness, $t=4.10$, $df=52$, $p<.01$). Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=10.08$, $df=52$, $p<.01$; middle affection, $t=7.24$, $df=52$, $p<.01$), and for the high compared with the

middle affection condition ($t=2.84$, $df=52$, $p<.01$).

The interaction effect between economic richness and affection approached significance ($t=2.01$, $df=4/104$, $p=.09$). The simple main effect of economic richness was significant for all three affection conditions (high affection, $F=8.46$, $df=2/156$, $p<.01$; middle affection, $F=3.56$, $df=2/156$, $p<.05$; low affection, $F=3.70$, $df=2/156$, $p<.01$). Under the high affection condition, scores were significantly higher for the middle than for the low and high economic richness conditions (low economic richness, $t=3.87$, $df=156$, $p<.01$; high economic richness, $t=3.14$, $df=156$, $p<.01$). Under the middle and low affection conditions, scores were significantly higher for the high and middle than for the low economic richness condition (middle affection, high economic richness, $t=2.40$, $df=156$, $p<.05$; low affection, high economic richness, $t=2.03$, $df=156$, $p<.05$; middle affection, middle economic richness, $t=2.21$, $df=156$, $p<.05$; low affection, middle economic richness, $t=2.59$, $df=156$, $p<.01$).

The simple main effect of affection was significant for all three economic richness conditions (high economic richness, $F=21.55$, $df=2/156$, $p<.01$; middle economic richness, $F=35.67$, $df=2/156$, $p<.01$; low economic richness, $F=27.11$, $df=2/156$, $p<.01$). Under the high economic richness condition, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=5.86$, $df=156$, $p<.01$; middle affection, $t=5.49$, $df=156$, $p<.01$). Under the middle and low economic richness conditions, scores were significantly higher for the high and middle than for the low affection condition (middle economic richness, high affection, $t=8.42$, $df=156$, $p<.01$; middle economic richness, middle affection, $t=4.76$, $df=156$, $p<.01$; low economic richness, high affection, $t=7.14$, $df=156$, $p<.01$; low economic richness, middle affection, $t=5.12$, $df=156$, $p<.01$), and for the high compared with the middle affection condition (middle economic richness, $t=3.66$, $df=156$, $p<.01$; low economic richness, $t=2.01$, $df=156$, $p<.05$).

Next, a 3 (economic richness) \times 3 (affection) ANOVA was performed using importance as the dependent variable. The main effects of economic richness ($F=10.19$, $df=2/52$, $p<.01$) and affection ($F=57.62$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=3.70$, $df=52$, $p<.01$; middle economic richness, $t=4.09$, $df=52$, $p<.01$).

Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=10.67$, $df=52$, $p<.01$; middle affection, $t=6.32$, $df=52$, $p<.01$), and for the high compared with the middle affection condition

($t=4.36$, $df=52$, $p<.01$).

A 3 (economic richness) \times 3 (affection) ANOVA was then performed using length as the dependent variable. The main effects of economic richness ($F=17.52$, $df=2/52$, $p<.01$) and affection ($F=50.80$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were higher for the high and middle than for the low economic richness condition (high economic richness, $t=5.19$, $df=52$, $p<.01$; middle economic richness, $t=5.05$, $df=52$, $p<.01$). Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=9.79$, $df=52$, $p<.01$; middle affection, $t=6.99$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=2.79$, $df=52$, $p<.01$).

A 3 (economic richness) \times 3 (affection) ANOVA was also performed using bigness as the dependent variable. The main effects of economic richness ($F=9.09$, $df=2/52$, $p<.01$) and affection ($F=50.24$, $df=52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=4.10$, $df=52$, $p<.01$; middle economic richness, $t=3.06$, $df=52$, $p<.01$).

Regarding affection, scores was significantly higher for the high and middle than for the low affection condition (high affection, $t=9.87$, $df=52$, $p<.01$; middle affection, $t=6.44$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=3.44$, $df=52$, $p<.01$).

Next, a 3 (economic richness) \times 3 (affection) ANOVA was performed using goodness as the dependent variable. The main effects of economic richness ($F=28.40$, $df=2/52$, $p<.01$) and affection ($F=120.73$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=6.95$, $df=52$, $p<.01$; middle economic richness, $t=5.99$, $df=52$, $p<.01$).

Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=15.37$, $df=52$, $p<.01$; middle affection, $t=9.64$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=5.72$, $df=52$, $p<.01$).

A 3 (economic richness) \times 3 (affection) ANOVA was then performed using changefulness as the dependent variable. The main effects of economic richness ($F=11.94$, $df=2/52$, $p<.01$) and affection ($F=84.36$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=4.02$, $df=52$,

$p < .01$; middle economic richness, $t = 4.42$, $df = 52$, $p < .01$). Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t = 12.83$, $df = 52$, $p < .01$; middle affection, $t = 8.21$, $df = 52$, $p < .01$), and for the high compared with the middle affection condition ($t = 4.62$, $df = 52$, $p < .01$).

The interaction effect between economic richness and affection was significant ($F = 3.90$, $df = 4/104$, $p < .01$). The simple main effect of economic richness was significant for all three affection conditions (high affection, $F = 5.88$, $df = 2/156$, $p < .01$; middle affection, $F = 7.24$, $df = 2/156$, $p < .01$; low affection, $F = 7.17$, $df = 2/156$, $p < .01$). Under the high affection condition, scores were significantly higher for the middle than for the high and low economic richness conditions (high economic richness, $t = 3.05$, $df = 156$, $p < .01$; low economic richness, $t = 2.88$, $df = 156$, $p < .01$).

Under the middle and low affection conditions, scores were significantly higher for the high and middle than for the low economic richness condition (middle affection, high economic richness, $t = 3.60$, $df = 156$, $p < .01$; middle affection, middle economic richness, $t = 2.88$, $df = 156$, $p < .01$; low affection, high economic richness, $t = 3.77$, $df = 156$, $p < .01$; low affection, middle economic richness, $t = 2.16$, $df = 156$, $p < .05$).

The simple main effect of affection was significant for all three economic richness conditions (high economic richness, $F = 19.66$, $df = 2/156$, $p < .01$; middle economic richness, $F = 51.70$, $df = 2/156$, $p < .01$; low economic richness, $F = 44.80$, $df = 2/156$, $p < .01$). Under the high economic richness condition, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t = 5.73$, $df = 156$, $p < .01$; middle affection, $t = 5.06$, $df = 156$, $p < .01$). Under the middle and low economic richness conditions, scores were significantly higher for the high and middle than for the low affection condition (middle economic richness, high affection, $t = 10.12$, $df = 156$, $p < .01$; middle economic richness, middle affection, $t = 5.90$, $df = 156$, $p < .01$; low economic richness, high affection, $t = 9.45$, $df = 156$, $p < .01$; low economic richness, middle affection, $t = 5.23$, $df = 156$, $p < .01$), and for the high compared with the middle affection condition (middle economic richness, $t = 4.22$, $df = 156$, $p < .01$; low economic richness, $t = 4.21$, $df = 156$, $p < .01$).

Next, a 3 (economic richness) \times 3 (affection) ANOVA was performed using clearness as the dependent variable. The main effects of economic richness ($F = 10.74$, $df = 2/52$, $p < .01$) and affection ($F = 75.43$, $df = 2/52$, $p < .01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t = 3.86$, $df = 52$, $p < .01$; middle economic richness, $t = 4.15$, $df = 52$, $p < .01$).

Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=11.90$, $df=52$, $p<.01$; middle affection, $t=8.57$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=3.34$, $df=52$, $p<.01$).

The interaction effect between economic richness and affection approached significance ($F=2.20$, $df=4/104$, $p=.07$). The simple main effect of economic richness was significant for all three affection conditions (high affection, $F=3.31$, $df=2/156$, $p<.05$; middle affection, $F=6.56$, $df=2/156$, $p<.01$; low affection, $F=7.05$, $df=2/156$, $p<.01$). Under the high affection condition, scores were significantly higher for the middle than for the high and low economic richness conditions (high economic richness, $t=2.02$, $df=156$, $p<.01$; low economic richness, $t=2.39$, $df=156$, $p<.05$). Under the middle and low affection conditions, scores were significantly higher for the high and middle than for the low economic richness condition (middle affection, high economic richness, $t=3.49$, $df=156$, $p<.01$; middle affection, middle economic richness, $t=2.57$, $df=156$, $p<.05$; low affection, high economic richness, $t=3.49$, $df=156$, $p<.01$; low affection, middle economic richness, $t=2.94$, $df=156$, $p<.01$).

The simple main effect of affection was significant for all economic richness conditions (high economic richness, $F=24.96$, $df=2/156$, $p<.01$; middle economic richness, $F=39.10$, $df=2/156$, $p<.01$; low economic richness, $F=43.96$, $df=2/156$). Under the high economic richness condition, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=6.28$, $df=156$, $p<.01$; middle affection, $t=5.94$, $df=156$, $p<.01$). Under the middle and low economic richness conditions, scores were significantly higher for the high and middle than for the low affection condition (middle economic richness, high affection, $t=8.73$, $df=156$, $p<.01$; middle economic richness, middle affection, $t=5.58$, $df=156$, $p<.01$; low economic richness, high affection, $t=9.25$, $df=156$, $p<.01$; low economic richness, middle affection, $t=5.94$, $df=156$, $p<.01$), and for the high compared with the middle affection condition (middle economic richness, $t=3.14$, $df=156$, $p<.01$; low economic richness, $t=3.32$, $df=156$, $p<.01$).

Next, a 3 (economic richness) \times 3 (affection) ANOVA was performed using stableness as the dependent variable. The main effects of economic richness ($F=32.12$, $df=2/52$, $p<.01$) and affection ($F=101.13$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=7.73$, $df=52$, $p<.01$; middle economic richness, $t=5.67$, $df=52$, $p<.01$), and for the high compared with the middle economic richness condition ($t=2.04$, $df=52$, $p<.05$). Regarding affection, scores were

significantly higher for the high and middle than for the low affection condition (high affection, $t=13.98$, $df=52$, $p<.01$; middle affection, $t=9.23$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=4.72$, $df=52$, $p<.01$).

The interaction effect between economic richness and affection was significant ($F=4.17$, $df=4/104$, $p<.01$). The simple main effect of economic richness was significant for all three affection conditions (high affection richness, $F=34.60$, $df=2/156$, $p<.01$; middle affection richness, $F=9.05$, $df=2/156$, $p<.01$; low affection richness, $F=6.31$, $df=2/156$, $p<.01$). Under the high affection condition, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=8.15$, $df=156$, $p<.01$; middle economic richness, $t=5.50$, $df=156$, $p<.01$), and for the high compared with the middle economic richness condition ($t=2.65$, $df=156$, $p<.01$).

Under the middle and low affection conditions, scores were significantly higher for the high and middle than for the low economic richness condition (middle affection, high economic richness, $t=4.07$, $df=156$, $p<.01$; middle affection, middle economic richness, $t=3.06$, $df=156$, $p<.01$; low affection, high economic richness, $t=3.26$, $df=156$, $p<.01$; low affection, middle economic richness, $t=2.85$, $df=156$, $p<.01$). The simple main effect of affection was significant for all three economic richness conditions (high economic richness, $F=75.81$, $df=2/156$, $p<.01$; middle economic richness, $F=52.74$, $df=2/156$, $p<.01$; low economic richness, $F=33.38$, $df=2/156$, $p<.01$).

Under the high and middle economic richness conditions, scores were significantly higher for the high and middle than for the low affection condition (high economic richness, high affection, $t=12.24$, $df=156$, $p<.01$; high economic richness, middle affection, $t=7.07$, $df=156$, $p<.01$; middle economic richness, high affection, $t=10.13$, $df=156$, $p<.01$; middle economic richness, middle affection, $t=6.50$, $df=156$, $p<.01$), and for the high compared with the middle affection condition (high economic richness, $t=5.16$, $df=156$, $p<.01$; middle economic richness, $t=3.63$, $df=156$, $p<.01$). Under the low economic richness condition, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=7.65$, $df=156$, $p<.01$; middle affection, $t=6.31$, $df=156$, $p<.01$).

A 3 (economic richness) \times 3 (affection) ANOVA was then performed using openness as the dependent variable. The main effects of economic richness ($F=16.65$, $df=2/52$, $p<.01$) and affection ($F=96.27$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=5.33$, $df=52$, $p<.01$; middle economic

richness, $t=4.58$, $df=52$, $p<.01$). Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=13.76$, $df=52$, $p<.01$; middle affection, $t=8.43$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=5.33$, $df=52$, $p<.01$).

A 3 (economic richness) \times 3 (affection) ANOVA was then performed using vividness as the dependent variable. The main effects of economic richness ($F=11.82$, $df=2/52$, $p<.01$) and affection ($F=113.30$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=4.48$, $df=52$, $p<.01$; middle economic richness, $t=3.88$, $df=52$, $p<.01$). Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=14.98$, $df=52$, $p<.01$; middle affection, $t=8.78$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=6.21$, $df=52$, $p<.01$).

Finally, a 3 (economic richness) \times 3 (affection) ANOVA was performed using activeness as the dependent variable. The main effects of economic richness ($F=8.33$, $df=2/52$, $p<.01$) and affection ($F=63.41$, $df=2/52$, $p<.01$) were significant. Regarding economic richness, scores were significantly higher for the high and middle than for the low economic richness condition (high economic richness, $t=2.95$, $df=52$, $p<.01$; middle economic richness, $t=3.91$, $df=52$, $p<.01$). Regarding affection, scores were significantly higher for the high and middle than for the low affection condition (high affection, $t=11.21$, $df=52$, $p<.01$; middle affection, $t=6.46$, $df=52$, $p<.01$), and for the high compared with the middle affection condition ($t=4.75$, $df=52$, $p<.01$).

Discussion

Looking at the results, beautifulness scores were higher for the high and middle than for the low economic richness condition. Regarding affection, the higher the degree of affection, the more beautiful the participants imagined the future would be. These results suggest the following. To achieve more beautifulness, it is desirable to have a higher degree of affection. However, a degree of economic richness is sufficient to be middle; the same results were obtained for attractiveness, lightness, warmth, activeness, vividness, openness, goodness, bigness, length, importance, easiness, and fastness.

Regarding adjective pair such as hopefulness, the results of the test of economic richness differed from those reported above. That is the following. In addition to the degree of affection, the higher the degree of economic richness is, the more hopeful the

future image is.

In addition to the main effects of economic richness and affection, interaction effects were obtained for adjective pairs such as pleasure, fulfillment, clearness, changefulness, nearness and stability. In regard to pleasure, under the high affection condition, a higher degree of economic richness is desirable. Thus, the higher the economic richness, the higher the pleasure score. This result highlights the importance of economic richness under the high affection condition.

Under the middle and low affection conditions, higher economic richness is desirable. Therefore, scores are higher for the high and middle than for the low economic richness condition. This result highlights the importance of economic richness under the middle and low affection conditions.

Although the relationship between the high and middle economic richness conditions differs between high affection and the other two conditions, the results indicate the importance of economic richness under all affection conditions.

Under all economic richness conditions, a higher degree of affection is desirable. That is, the higher the degree of affection, the higher the pleasure score. This result indicates the importance of affection under all economic richness conditions.

These findings suggest the following. Under all affection conditions, a higher degree of economic richness is desirable to achieve a higher pleasure score. In addition, under all economic conditions, a higher degree of affection is desirable to achieve a higher pleasure score. The results of the stability and fulfillment scores are basically the same as those for the pleasure score.

Regarding the results of the changefulness scores, under the high affection condition, scores were higher for the middle than for the other two economic richness conditions. We interpreted this result as follows. Under the high affection condition combined with a high degree of affection, participants under the high economic richness condition were fully satisfied with their present situation and were not considered to be leading a changeful or challenging life. In addition, under the low economic richness condition, the participants became pessimistic and were not achievement-oriented. On the other hand, participants under the middle economic richness condition who were satisfied with their present situation to some degree were achievement-oriented and considered to be leading a changeful and challenging life. Therefore, under the high affection condition, scores were higher for the middle than for the other two economic richness conditions.

On the other hand, under the middle and low affection conditions that not receive the

affection sufficiently, the higher degree of economic richness needs to lead the changefulness or challenging life. Thus, changefulness scores were higher for the high and middle than for the low economic richness condition.

Under the high economic richness condition, a higher degree of affection is desirable. Therefore, under the high economic richness condition, scores were higher for the high and middle than for the low affection condition. This result indicates the importance of affection under the high economic richness condition. Under the middle and low economic richness conditions, a higher degree of affection is desirable. Therefore, the higher the degree of affection, the higher the changefulness score. This result indicates the importance of affection under the middle and low economic richness conditions.

Although the relationship between the high and middle affection conditions differs between the high and other two economic richness conditions, these results indicate the importance of affection under all three economic richness conditions.

These findings suggest the following. Under the high affection condition, a middle economic condition results in higher changefulness scores compared with the high and low economic conditions. On the other hand, under the middle and low affection conditions, a higher degree of the economic richness is desirable to achieve a higher changefulness score. The results in regard to clearness and nearness were basically the same as those for changefulness.

In conclusion, future time image is affected by the degree of both economic richness and affection; this finding suggests that the type of influence varies in accordance with the type of future time image.

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(Note 1)

Economic richness H and Affection H

You have a high degree of economic richness, which allows you to lead a luxurious life. Furthermore, you receive a high degree of affection from your family and friends. Please imagine the described sentence and answer the following question.

Economic richness H and Affection M

You have a high degree of economic richness, which allows you to lead a luxurious life. Furthermore, you receive some degree of affection from your family and friends. Please imagine the described sentence and answer the following question.

Economic richness H and Affection L

You have a high degree of economic richness, which allows you to lead a luxurious life. However, you do not receive any affection from your family or friends. Please imagine the described sentence and answer the following question.

Economic richness M and Affection H

You have some degree of economic richness. Furthermore, you receive a high degree of affection from your family and friends. Please imagine the described sentence and

answer the following question.

Economic richness M and Affection M

You have some degree of economic richness. Furthermore, you receive some degree of affection from your family and friends. Please imagine the described sentence and answer the following question.

Economic richness M and Affection L

You have some degree of economic richness. However, you do not receive any affection from your family or friends. Please imagine the described sentence and answer the following question.

Economic richness L and Affection H

You do not have any economic richness. However, you receive a high degree of affection from your family and friends. Please imagine the described sentence and answer the following question.

Economic richness L and Affection M

You do not have any economic richness. However, you receive some degree of affection from your family and friends. Please imagine the described sentence and answer the following question.

Economic richness L and Affection L

You do not have any economic richness. Furthermore, you do not receive any affection from your family or friends. Please imagine the described sentence and answer the following question.