

## EFFECTS OF THE DELIBERATE DECISION-MAKING STYLE ON CAREER DECISION-MAKING PROCESSES AND COPING WITH REGRET AFTER HIGH SCHOOL

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This study examined how the factors associated with high school students' decision-making styles affect their choice-of-university behaviors and goal achievement behaviors to pass the entrance examinations and analyzed the effects of this decision-making style and affiliations on their emotions and ability to cope with regret after graduation. We surveyed 318 senior high school students and followed up with them for six months after graduation. In Study 1, to clarify the relation between these factors and behaviors, the data were analyzed using structural equation modeling. The results indicated that two types of sub processes were active during the career decision-making processes: the choice-behavior decision-making process and the goal-achievement-behavior process. In Study 2, students who tended to have the high-deliberate style when deciding to take admission to their affiliation felt less regret and disappointment about their affiliation. These investigations stress the importance of high school students being encouraged to deliberate carefully about their academic future.

**Key words:** decision-making style, career decision-making, regret, entrance examination, high school student

The choice of university is one of the most important decisions that we make over the course of our long lives<sup>1</sup>. This is because it is considered that prestigious universities with good reputation (top-notch, name value, etc.) not only offer students access to higher quality education but also assure a higher probability of securing employment in a major company (e.g., Takeuchi, 1997). To make good career decisions, high school students need to gather appropriate information about the universities they want admission to;

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<sup>1</sup> In Japan, over half of high school students go on to institutions of higher education (universities, junior colleges, and colleges of technology) (Ministry of Education, Culture, Sports, Science and Technology, 2011). There are two major methods employed by Japanese universities for the selection of students: A written examination (the so-called general entrance examination) and recommendations (e.g., affiliation office examinations). The general entrance examinations are conducted in winter, once per year. Students are required to take the general entrance examinations if they wish to be admitted to prestigious national universities, well-known public universities, or long-established private universities. Affiliation decisions are made based only on the scores achieved on the written examination and do not take school reports into consideration.

deliberate on the reputation of these universities and the utilities offered, their own interests and aptitudes, and study workload in order to pass the examinations; and choose the most appropriate university.

One of the potentially important factors associated with choice behavior is the thought pattern during decision-making. Janis and Mann (1977) classified decision-making styles used during conflict into five factors. The most important factor is *vigilance* (the deliberate choice of a thoroughly examined option). This deliberate decision-making style represents a specific thought pattern that we consider to be one of the most important when selecting a university.

This style is significantly associated with students' information gathering and choice of entrance examinations. Germeijs and Verschueren (2006) and Urakami (1993) suggested that at the beginning of the academic decision-making process, broad exploration (e.g., gathering general information about academic alternatives) is important, while later, in-depth exploration (gathering detailed information about a reduced set of academic alternatives) is more critical. This view emphasizes not only the need to gather appropriate amount of detailed information but also the importance of the deliberate decision-making style. Using a vignette-style questionnaire, Ueichi and Kusumi (2004) found that individuals who deliberated more were more likely to apply to a second-choice university than to a first-choice one.

Another factor associated with career decision-making is the decision-making strategy, which is used to compare each option for selection. Few universities can satisfy all the demands of a prospective student. In many cases, there is a trade-off between the benefits and risks of enrolling in a given university. Kuriyama, Ueichi, Saito, and Kusumi (2001) indicated that there are several important factors involved in the choice-of-university decision-making strategy (see procedure in Study 1). The above research found that students initially begin considering the choice of entrance examinations by using the complete strategy, after which they used multi-attribute decision-making and constraint satisfaction, finally followed by goal satisfaction.

Mischel and Shoda (1995) proposed a decision-making process model named the cognitive-affective personality system. This model assumes that cognitive and affective factors interact and that, together, these factors influence behavior. Trimpop (1994) and Ueichi and Kusumi (1999) indicated that cognitive and emotional factors affect behavior, mediated by utility assessment.

Alternatively, based on the social cognitive theory (Bandura, 1986), Lent, Brown, and Hackett (1994) proposed the social cognitive career theory (SCCT). This theory assumes that self-efficacy is affected by experience (own past experiences and those of others) and that it affects outcome expectations (perceived benefits such as satisfaction and delight), as well as goal achievement behaviors and sub-goal behaviors that are preliminary steps of goal achievement behaviors, such as gathering information and planning to achieve the goal. According to this theory, self-efficacy affects preliminary behaviors that are required to accomplish a goal.

Thus, these researches suggest there are two career decision-making processes: (1) Choice-behavior decision-making process defining the relationship between factors

affecting choice behavior, such as the effects of decision-making style on choice behavior mediated by cognitive factors, (2) Goal-achievement-behavior decision-making process describing the relationship between factors affecting behaviors, such as drawing upon experience that affects goal achievement behavior through the mediation of preliminary behaviors.

Next, we consider the emotions of students after they secure admission to a university. People are not always satisfied, even if they are provided with the best option (Paivandy, Bullock, Reardon, & Kelly, 2008; Schwartz, 2004). It appears that some high school students may have a negative attitude toward entrance examinations, even after securing admission to a university of their choice. Expressions that depict negative thinking, such as “I felt less satisfied than expected and regret my decision” and “the university climate doesn’t correspond with my interests and values” may result in a student being unable to adapt to the university environment and possibly leaving<sup>2</sup>.

Regret is the emotion experienced when one compares the outcome of one’s chosen option with the outcome that one would have obtained on choosing another option (e.g., Gilovich, Medvec, & Kahneman, 1998; Kahneman & Miller, 1986; Zeelenberg, van Dijk, van der Pligt, Manstead, van Empelen, & Reinderman, 1998; Zeelenberg & Pieters, 2004). The sting of a regrettable action diminishes relatively quickly, whereas that of regrettable inaction often lingers much longer (Gilovich & Medvec, 1994; 1995). Regrets concerning education and work are negatively associated with life satisfaction, and depressive symptoms are associated with self-related regrets (Jokisaari, 2004). Pieters and Zeelenberg (2005) reported that people feel regret not only when they make bad decisions (i.e., decisions that produce negative outcomes) but also when they make poor decisions (i.e., when the quality of their decision-making process is low). This finding suggests that how we think during decision-making is as important as how we assess the outcomes after the fact.

One of the important factors that avoid regret is the deliberate decision-making style (Ueichi & Kusumi, 2004). Using a vignette-style questionnaire, the aforementioned study suggested that the people who used the deliberate decision-making style felt less regret when they got negative outcomes, and they coped more effectively with feelings of regret than those who did not use this style.

The following two research questions arise from the previous review. First, the research described thus far has not systematically examined how decision-making style affects two different career decision-making processes: choice behavior decision-making process and goal-achievement decision-making process. With regard to making university choices, a specific concrete relationship between several factors that affect choice behavior and goal achievement behavior has not been clarified in the existing literature.

Second, with respect to the emotions of students after either successfully securing admission to various affiliations (first- or second-choice universities) or failing the

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<sup>2</sup> It is more difficult to enter universities than it is to graduate from universities in Japan. Survival rates for university students range around 90% and the dropout rate is 11% (Statistics and Indicators Division, Organization for Economic Co-operation and Development, 2000). Feelings of dissatisfaction, regret, and disappointment are a more important cause of dropout than academic reasons.

entrance examinations, in reality, the effects of the deliberate decision-making style on emotions and coping with regret over time have yet to be investigated. For example, how does the intensity of these emotions change over time and which types of coping methods are used to manage regret? The answers to these questions may help high school students in making their choice of university as well as important sound decisions later in life.

Therefore, in Study 1, we examine decision-making processes within the context of passing the entrance examinations. In Study 2, we investigate the effects of decision-making style on emotions and coping methods for managing regret after decision-making choices were made and outcomes known.

### STUDY 1: CAREER DECISION-MAKING PROCESSES

Study 1 examined the relationship among the deliberate decision-making style, drawing upon experience, decision-making strategy, perceived benefit, gathering information, planning for the examination, choice behavior, and goal achievement behavior. We assumed that the deliberate decision-making style and drawing upon experience affected choice and goal achievement behavior mediated by cognitive factors (decision-making strategy and perceived benefit) and preliminary behaviors (gathering information and planning for an examination). Then, in line with previous studies (Lent, et al., 1994; Mischel & Shoda, 1995; Trimpop, 1994; Ueichi & Kusumi, 1999), we used structural equation modeling to concretely identify the causal relationships between these factors.

### METHOD

#### *Participants*

Participants were 385 students (196 males, 187 females, and 2 individuals who did not reveal their gender) who were applying to university from an academic-track high school in the Tokyo metropolitan area in Japan. The participants were all 17 or 18 years old.

#### *Procedure*

The questionnaire was administered during class, early in November 2003. We used the completed questionnaires of 318 participants (170 males, 147 females, and 1 individual who did not reveal his or her gender) who wanted to take the general entrance examination (written).

#### *Questionnaire*

The questionnaire comprised eight scales. Each item was rated on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*).

*Deliberate decision-making style.* The deliberate decision-making style scale measured the degree to which the participants thought deliberately when engaging in choice-of-university decision making. We based the scale on the concept of *vigilance* described by Janis and Mann (1977). The scale was composed of three items: "I think deliberately not only my college life but also my future career," "I think about the qualifications I can earn at the universities," and "I am aware of my aptitude as well as of the subjects that I can study at the universities."

*Drawing upon experience.* The drawing upon experience scale measured the degree to which participants draw upon someone's experiences (e.g., how to plan for examinations and what to do to pass

them) or the degree to which they think that drawing upon someone's experiences helps them. We developed this scale based on the concepts of Bandura (1986) and Lent et al. (1994), and it is composed of three items: "I draw upon some of the experiences of other students from universities I want admission to," "I think that drawing upon someone's successful experiences could help me to succeed," and "I think that drawing upon someone else's experiences of failure might help me to avoid failure."

*Decision-making strategy.* The decision-making strategy scale assessed the methods that the participants used to compare each option and to select an option when thinking about choice of university. We based this scale on that used by Kuriyama et al. (2001). The scale comprised four sub scales. The complete strategy sub scale was composed of two items: "I only choose the option that meets all my conditions" and "I eliminate options that have unsatisfactory attributes." The multi-attribute decision-making sub scale was composed of three items: "I make a decision after arranging the possible options in order of importance and comparing them," "I decide comprehensively, by comparing various aspects of each option," and "I thoroughly assess the merits and demerits of each option." The constraint satisfaction sub scale was composed of two items: "I find solutions by adjusting, in the event of a conflict between my ideals and reality" and "I am more likely to make a compromise with reality than to search for ideal options." The goal satisfaction sub scale was composed of two items: "I choose the option that has the single most important requirement" and "I think about an option and then decide whether I am satisfied with it."

*Perceived benefit.* This scale that we developed comprised two sub scales based on the concepts of Lent et al. (1994) and Ueichi and Kusumi (1999). The perceived benefit for the first-choice sub scale included two items: "I have high expectations of my first-choice university" and "I will be delighted if I pass my first-choice university entrance examination." The perceived benefit for the second-choice sub scale included two items: "I have high expectations of my second-choice university" and "I will be delighted if I pass my second-choice university entrance examination."

*Gathering information.* The gathering information scale measured the degree to which participants gathered information about the curricula and research pursuits at prospective universities and how they verified published information about university entrance examinations and the universities themselves. Our scale was composed of three items: "I gather as much information as possible about the curricula and research pursuits at each university," "I compare the examination information for each university using my own method when considering university entrance examinations," and "I check and confirm the contents of each entrance examination."

*Planning for the examination.* The planning for the examination scale measured the degree to which participants took preliminary steps toward achieving their goal of a university admission. Our scale was composed of three items: "I understand the distinction between my goal and my current situation (academic performance and study workload)," "I try to implement some learning styles or processes that I read about," and "I modify my learning program as required."

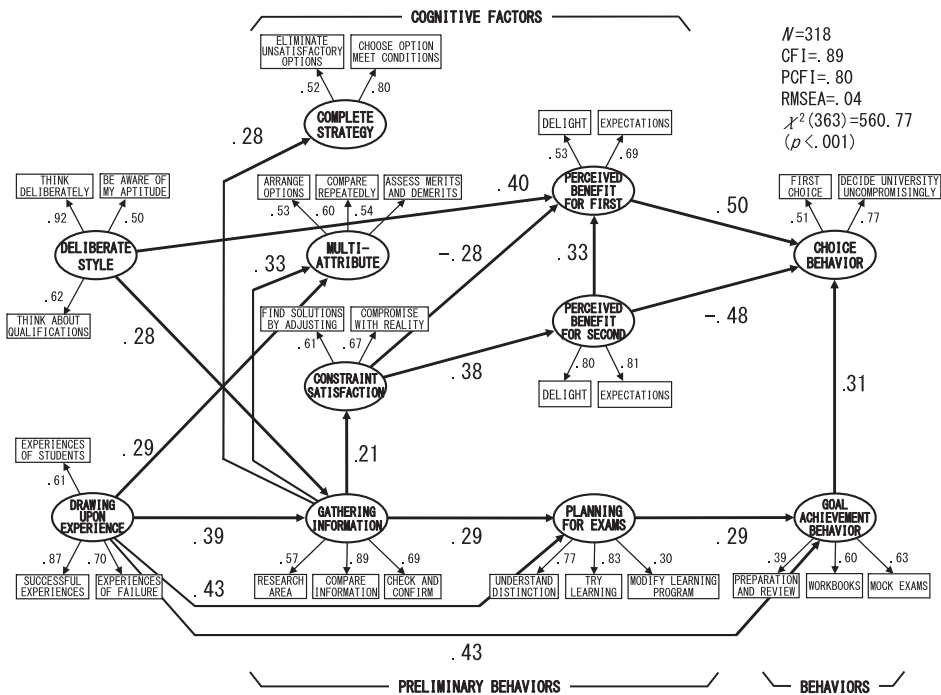
*Choice behavior.* The choice behavior scale measured the degree to which participants wanted to take the entrance examination of their first-choice university. Our scale was composed of two items: "I want to take the entrance examination of my first-choice university," and "I want to decide the university and take its entrance examination without making compromises."

*Goal achievement behavior.* The goal achievement behavior scale measured the degree to which participants studied to pass the entrance examination for their first-choice university. Our scale was composed of three items: "I do enough preparation for class and review the things that I have learned in class," "I use workbooks and study guides to prepare," and "I take many mock examinations."

## RESULTS AND DISCUSSION

Table 1 depicts the means and standard deviations of each item, Cronbach's coefficient alphas of each factor, and the correlation coefficient matrix.

To clarify the relationship between these factors and behaviors, except goal satisfaction, which has a very low Cronbach's coefficient alpha, the data were analyzed using structural equation modeling (Bollen, 1989)<sup>3</sup>. Fig. 1 depicts the relationship



**Fig. 1.** Standard Coefficients for a Causal Model of Career Decision-Making Processes. Note: The ovals represent latent variables and the rectangles represent observed variables. Every error variable that affects latent and observed variables in the figure has not been provided. Each path coefficient is standardized. Path coefficients are significant at  $p < .05$ .

between each factor and behaviors (Amos 7.0 statistical software package). The standardized path coefficients between latent variables and between latent variables and observed variables are significant at  $p < .05$ . The indices of goodness of fit are CFI = .89, PCFI = .80, RMSEA = .04, and  $\chi^2(363) = 560.77$  ( $p < .001$ ). These results indicate that our model is a good fit to the data (it appears that  $\chi^2$  was rejected due to the large sample size; Schumacker & Lomax, 2004).

This result implies that the deliberate decision-making style and drawing upon experience affect behaviors, a relationship mediated by cognitive factors and preliminary behaviors. On the whole, this result supports our initial assumption.

The deliberate decision-making style and drawing upon experience on choice behavior affected gathering information (path coefficient = .28 and .39). Gathering information affected not only the decision-making strategy (complete strategy = .28, multi-attribute = .33, and constraint satisfaction = .21) but also planning for examination (.29). The decision-making strategy affected choice behavior, mediated by the perceived benefit for the first (.50) and the second (-.48). Planning for examination affected goal

<sup>3</sup> Low Cronbach's coefficient alpha for goal satisfaction might have been caused by the low internal consistency between items (the coefficient in Kuriyama et al. (2001) was .26). The effects of goal satisfaction on other factors require further investigation.

Table 1. Means and Standard Deviations of Each Item, Cronbach's Coefficient Alphas of Each factor, and Correlation Coefficient Matrix ( $N = 318$ )

Item ( $\alpha$ )	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29														
Deliberate decision-making style (.67)																																													
1. Think deliberately	3.98	.98																																											
2. Be aware of my aptitude	3.71	.97	<b>.42</b>																																										
3. Think about qualification	3.47	1.10	<b>.53</b>	<b>.28</b>																																									
Drawing upon experience (.68)																																													
4. Experiences of failure	4.02	.88	.04	<b>.15</b>	.09																																								
5. Successful experiences	3.70	1.13	-.04	<b>.23</b>	-.01	<b>.57</b>																																							
6. Experiences of students	3.11	1.32	.07	<b>.25</b>	<b>.12</b>	<b>.34</b>	<b>.42</b>																																						
Complete strategy (.58)																																													
7. Eliminate unsatisfactory options	2.68	1.11	.06	-.00	-.02	-.02	.02	.11																																					
8. Choose option meet conditions	2.39	1.09	<b>.12</b>	.10	.09	.04	.05	.11	<b>.41</b>																																				
Multi-attribute (.58)																																													
9. Assess merits and demerits	3.64	1.05	.11	<b>.12</b>	.09	<b>.18</b>	<b>.16</b>	<b>.22</b>	<b>.19</b>	<b>.12</b>																																			
10. Arrange options	3.31	1.11	.07	<b>.14</b>	<b>.08</b>	<b>.16</b>	<b>.13</b>	<b>.19</b>	<b>.16</b>	<b>.10</b>	<b>.30</b>																																		
11. Compare repeatedly	2.42	1.10	.05	.09	.10	<b>.13</b>	<b>.16</b>	<b>.20</b>	<b>.24</b>	<b>.20</b>	<b>.29</b>	<b>.34</b>																																	
Constraint satisfaction (.58)																																													
12. Compromise with reality	3.34	1.04	-.06	.03	-.01	<b>.13</b>	.02	.08	<b>.13</b>	.03	<b>.16</b>	.11	<b>.18</b>																																
13. Find solutions by adjusting	3.32	1.11	.02	-.02	.04	<b>.13</b>	.04	.05	.07	.01	.09	.11	<b>.15</b>	<b>.41</b>																															
Goal satisfaction (.04)																																													
14. Have the important thing	3.37	1.10	.17	.09	.10	<b>.13</b>	<b>.12</b>	<b>.12</b>	-.02	.05	-.06	-.08	.07	-.03	.09																														
15. Think whether I am satisfied	3.09	.99	-.01	.08	.10	.09	.09	.05	-.06	-.08	-.03	.10	.11	-.02	-.00	.02																													
Perceived benefit for first (.41)																																													

16. Delight	4.92	.28	<b>.16</b>	<b>.12</b>	.08	.07	.11	.01	.06	-.02	-.07	-.03	-.06	.04	.04																	
17. Expectation	4.52	.72	<b>.22</b>	<b>.12</b>	<b>.13</b>	<b>.16</b>	.01	.07	.00	-.02	-.07	-.08	-.07	.14	<b>-.39</b>																	
Perceived benefit for second (.79)																																
18. Delight	3.77	1.09	.01	.07	.02	-.01	.06	.07	.11	.05	.10	.05	.09	<b>.22</b>	<b>.22</b>	-.10	.07	.07														
19. Expectation	3.38	1.03	.10	<b>.20</b>	<b>.12</b>	.03	.06	<b>.14</b>	<b>.12</b>	.05	.08	.06	.07	<b>.17</b>	<b>.14</b>	-.05	.07	.06	<b>.25</b>	<b>.66</b>												
Gathering information (.73)																																
20. Check and confirm	3.53	1.11	<b>.13</b>	<b>.28</b>	<b>.15</b>	.07	<b>.19</b>	<b>.32</b>	.05	<b>.16</b>	<b>.18</b>	<b>.17</b>	<b>.21</b>	.05	.11	.00	.09	.09	.08	<b>.13</b>	<b>.14</b>											
21. Research area	3.42	1.17	<b>.22</b>	<b>.38</b>	<b>.17</b>	<b>.17</b>	<b>.24</b>	<b>.37</b>	.05	<b>.17</b>	.03	.10	-.05	-.03	-.04	.10	<b>.14</b>	.07	.06	<b>.32</b>												
22. Compare information	3.22	1.13	<b>.16</b>	<b>.28</b>	<b>.26</b>	.11	<b>.21</b>	<b>.38</b>	<b>.12</b>	<b>.19</b>	<b>.22</b>	.09	<b>.24</b>	.06	<b>.15</b>	.04	.01	.06	<b>.12</b>	.08	<b>.16</b>	<b>.51</b>										
Planning for examination (.65)																																
23. Understand distinction	4.27	.93	.02	-.01	.05	.13	.08	.11	.04	.01	<b>.16</b>	.11	.06	.11	<b>.21</b>	-.05	-.03	.10	.06	<b>.25</b>	<b>.17</b>	.05	.02	.05								
24. Try learning	2.97	1.22	.04	<b>.19</b>	.11	<b>.21</b>	<b>.35</b>	<b>.41</b>	.08	.09	.06	<b>.12</b>	<b>.16</b>	.08	.06	.04	<b>.14</b>	<b>.13</b>	.11	<b>.13</b>	<b>.24</b>	<b>.21</b>	<b>.30</b>	<b>.25</b>								
25. Modify learning program	2.94	1.25	<b>.12</b>	<b>.15</b>	.10	<b>.20</b>	<b>.27</b>	<b>.36</b>	.10	.10	.10	<b>.14</b>	<b>.16</b>	.08	.09	.07	.04	.11	.09	.08	.09	<b>.23</b>	<b>.23</b>	<b>.29</b>	<b>.24</b>	<b>.63</b>						
Choice behavior (.54)																																
26. Decide uncompromisingly	4.09	1.05	<b>.20</b>	<b>.13</b>	.10	<b>.13</b>	<b>.19</b>	<b>.21</b>	.09	.10	.01	-.01	.01	-.13	-.13	<b>.21</b>	-.06	<b>.22</b>	<b>.22</b>	<b>-.23</b>	-.17	.10	<b>.14</b>	.11	.01	<b>.19</b>	<b>.14</b>					
27. First choice	2.91	1.53	.10	.08	.10	<b>.13</b>	.09	.07	-.06	.01	.01	-.06	-.04	-.13	-.19	.10	.03	.08	.08	<b>-.21</b>	-.14	.01	.06	.05	-.10	.06	.03	<b>.40</b>				
Goal achievement behavior (.53)																																
28. Workbooks	4.46	.76	.08	<b>.22</b>	.05	<b>.15</b>	<b>.19</b>	<b>.21</b>	.02	<b>.14</b>	<b>.13</b>	.04	<b>.12</b>	.07	.02	.01	-.01	<b>.15</b>	<b>.14</b>	-.10	.05	<b>.16</b>	<b>.19</b>	.04	<b>.27</b>	<b>.24</b>	<b>.20</b>	<b>.20</b>				
29. Mock exams	3.37	1.69	.06	<b>.15</b>	-.01	<b>.27</b>	<b>.27</b>	<b>.28</b>	.04	.03	<b>.16</b>	<b>.13</b>	<b>.12</b>	.07	-.00	.06	.04	<b>.12</b>	.10	-.08	-.01	.09	<b>.18</b>	<b>.18</b>	-.01	<b>.17</b>	<b>.19</b>	<b>.15</b>	<b>.12</b>	<b>.39</b>		
30. Preparation and review	3.04	1.19	<b>.12</b>	<b>.21</b>	.10	<b>.17</b>	<b>.17</b>	<b>.21</b>	.01	-.01	.02	.08	.07	.00	-.03	.09	.11	-.04	.09	.09	.11	<b>.15</b>	.09	<b>.20</b>	<b>.12</b>	.04	<b>.20</b>	<b>.20</b>	-.00	-.10	<b>.20</b>	<b>.26</b>

Note. Minimum score = 1 and maximum score = 5. Correlation coefficients with  $|r| \geq .12$  are significant at  $p < .05$ . They are presented in the bold type.



achievement behavior (.29). Goal achievement behavior affected choice behavior (.31).

This implies that high school students who deliberate and draw upon the experiences of success or failure tend to gather and check information before deciding on an examination. Individuals who used constraint satisfaction tended to consider both the utilities for first- and second-choice universities, reported greater levels of delight and more positive expectations for second-choice universities than for first-choice universities, and therefore, they chose second-choice universities. They also tended to try to modify their own learning styles or programs, and therefore, study for examinations in advance, review what they learned, and study using workbooks. Individuals who deliberated without drawing upon experiences, however, tended to mainly consider the utilities for first-choice universities without considering the utilities for second-choice universities.

It was found that two types of sub-processes are active during the career decision-making process: the choice-behavior decision-making process and the goal-achievement-behavior decision-making process. We indicated not only the choice-behavior decision-making process but also the effects of the deliberate decision-making style on behavior more concretely and in more detail than that indicated in previous studies (Trimpop, 1994; Ueichi & Kusumi, 1999).

In addition, the finding that drawing upon experience and gathering information are components of the goal-achievement-behavior decision-making process and that these factors also affect the choice-behavior decision-making process would appear to indirectly explain parts of the SCCT (Lent, et al., 1994). This is because drawing upon experience, which is thought to influence self-efficacy, affects gathering information and planning for the examination, which are regarded as the sub-goals of SCCT, which in turn affect goal achievement behavior. Drawing upon experience and gathering information affect decision-making strategy and perceived benefit, which are regarded as the outcome expectation of SCCT, which in turn affects choice behavior. The interactions among the deliberate decision-making style, drawing upon experience, and gathering information might have resulted from self-efficacy, thereby affecting the career decision-making processes.

Moreover, the important finding is that gathering information, which was affected by the deliberate decision-making style and drawing upon experience, connects choice-behavior decision-making process and goal-achievement-behavior decision-making process. Study 1 was conducted in early November of 2003. At that time, students needed to decide which university entrance examinations they wanted to take, given that the application dates for the general entrance examination in Japan range mainly from December to January. Thus, they would gather diverse and appropriate information during the in-depth exploration stage (Germeijs & Verschueren, 2006; Urakami, 1993). In addition, in-depth exploration would probably require careful consideration and drawing upon experience. These results suggest that to make good decisions, in other words, to appropriately assess diverse universities and to make adequate efforts to study for examinations, high school students need to carefully consider using the deliberate decision-making style, draw upon someone's experiences, and gather diverse and appropriate information.

## STUDY 2: EFFECTS OF THE DELIBERATE DECISION-MAKING STYLE ON EMOTIONS AND COPING

The results of Study 1 indicated that the deliberate decision-making style is one of the important factors that high school students should consider when making decisions regarding the selection of universities. In Study 2, we examined (a) the effects of the deliberate decision-making style on emotions (satisfaction, regret, and disappointment) after high school and (b) the effects of the deliberate decision-making style on coping with regret, in an effort to examine how emotions and coping methods change over time.

### METHOD

#### *Participants*

Participants were 318 students (170 males, 141 females, and 1 individuals who did not indicate their gender) who participated in Study 1, and who were applying to university between January and March of 2004. All participants were 18 or 19 years old.

#### *Procedure*

We contacted the participants by mail in August 2004 to complete a follow-up questionnaire survey. Responses were received from 143 students (51.6% of the total in Study1): Males were 58 (34.1%) and females were 85 (60.3%).

#### *Follow-up questionnaire*

The follow-up questionnaire comprised four scales: affiliation, deliberate decision-making style, emotions experienced, and coping methods with regret. Each item was rated on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*), except affiliation.

*Affiliation.* Participants chose one of the following options: "I attend my first-choice university (first-choice university students)," "I attend another university as I failed the entrance examination of my first-choice university (second-choice university students)," or "I attend cramming school to prepare for success the next time as I failed the entrance examinations (cramming school students)."

*Deliberate decision-making style.* We used an item of the highest path coefficient of the deliberate decision-making style in Fig. 1: "I thought deliberately when deciding my affiliation."

*Emotion.* We measured the intensity of the participants' emotions (satisfaction, regret, and disappointment) regarding their affiliation immediately after they decided their own affiliation and feelings at the moment they responded to the questionnaire. Each of the emotions was measured by one item (Ueichi & Kusumi, 2004; see Table 2): "Immediately after making the affiliation decision, how strongly did you feel satisfaction/regret/disappointment for your affiliation?" and "At present, how strongly do you feel satisfaction/regret/disappointment with regard to your affiliation?" Participants' emotions in the immediate aftermath, however, were measured based on their recall.

*Coping with regret.* We measured the degree to which the individuals who felt regret used each coping technique described, immediately after the affiliation decision as well as in the present. The copings comprised rationalization, improvement with greater effort, and changing one's own actions (Ueichi & Kusumi, 2004). Each coping was measured by one item (see Table 3). Rationalization was measured by the following items: "Immediately after the affiliation decision, I thought that taking admission to this university (in case of cramming school students: this cramming school) might be beneficial for me later in life" and "At present, I think that taking admission to this university (or this cramming school) might be beneficial to me later in life." Improvement with greater effort was measured by the following items: "In the immediate aftermath, I thought that I would make every effort to get a job that allows me to use my talents (or to pass the entrance examinations next year)" and "At present, I think that I will make every effort to get a job that allows me to use my talents (or to pass the entrance examinations next year)." Changing one's own actions was

Table 2. Means, Standard Deviations, and Correlation Coefficients Matrix of Decision-Making Style and Each Emotion ( $N = 143$ )

Item	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Decision-making style								
1. Deliberate	3.57	1.28						
Regret								
2. Immediate aftermath	2.19	1.18	-.01					
3. At present	2.14	1.14	-.08	<b>.40</b>				
Satisfaction								
4. Immediate aftermath	3.73	1.28	.07	<b>-.68</b>	-.08			
5. At present	4.01	1.04	.13	<b>-.66</b>	<b>-.59</b>	<b>.55</b>		
Disappointment								
6. Immediate aftermath	2.01	1.07	.02	<b>.66</b>	<b>.52</b>	<b>-.42</b>	<b>-.58</b>	
7. At present	2.03	1.08	-.05	<b>.35</b>	<b>.74</b>	-.10	<b>-.58</b>	<b>.58</b>

Note. Minimum score = 1 and maximum score = 5. Correlation coefficients with  $|r| \geq .35$  are significant at  $p < .05$ . They are presented in the bold type.

Table 3. Means and Standard Deviations of Each Emotion by Decision-Making Style, Affiliation, and Time ( $N = 143$ )

Item	Low deliberate-type						High deliberate-type					
	First choice ( $n = 22$ )		Second choice (23)		Cramming school (19)		First choice (32)		Second choice (38)		Cramming school (9)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Regret												
Immediate aftermath	1.55	.74	2.22	1.00	2.89	1.29	1.56	.91	2.45	1.12	3.33	1.12
At present	2.05	1.00	2.48	1.04	2.26	1.28	1.91	1.23	2.21	1.09	1.78	1.30
Satisfaction												
Immediate aftermath	4.59	.59	3.70	1.06	2.26	1.10	4.56	.88	3.58	1.22	2.56	1.01
At present	4.41	.59	3.83	.72	3.32	1.16	4.38	.98	4.00	1.12	3.67	1.41
Disappointment												
Immediate aftermath	1.68	.65	2.17	.94	2.11	1.33	1.62	1.01	2.22	1.11	2.67	1.23
At present	2.14	.89	2.35	.94	1.95	1.31	1.72	1.09	2.24	1.14	1.44	.73

Note. Minimum score = 1 and maximum score = 5. Values in parentheses represent the number of responses. First choice: university students who entered first-choice universities, Second choice: university students who entered a university other than that of their first choice, Cramming school: cramming school students who failed entrance examinations.

measured by the following items: "Immediately after the affiliation decision, I thought that I would not take the civil service examinations, qualification examinations, etc. (or the entrance examinations of the universities), if the probability of passing these examinations was low" and "At present, I think that I will not take the civil service examinations, qualification examinations, etc. (or the entrance examinations of the universities), if the probability of passing these examinations was low." Participants' copings in the immediate aftermath, however, were measured based on their recall.

## RESULTS AND DISCUSSION

### *Effects of the Deliberate Decision-Making Style, Affiliation, and Time on Emotion*

Table 2 depicts the means and standard deviations of each item of emotions and the correlation coefficient matrix. The results indicated that the correlations between each emotion and the deliberate decision-making style are not significant. However, it is rather likely that each emotion is affected by the interactions between the deliberate decision-making style, affiliation, and time. Therefore, we clarify the effects of the interactions on each emotion by using ANOVA.

Each emotion score was analyzed using a 2 (deliberate decision-making style: high-deliberate type or low-deliberate type)  $\times$  3 (affiliation: first-choice university student, second-choice university student, or cramming school student)  $\times$  2 (time: in the immediate aftermath or at present) ANOVA with time as the repeated subjects factor. Participants were classified into either the high-deliberate type (deliberate decision-making scale scores = 4 or 5) or the low-deliberate type (scores = 1–3). Table 3 depicts the means and standard deviations for each emotion as a function of time, deliberate decision-making style, and affiliation.

With respect to regret, there were significant interactions between time and the deliberate decision-making style,  $F(1, 137) = 5.89, p < .05$  and between time and affiliation,  $F(2, 137) = 14.06, p < .001$ , suggesting that the participants who decided after deliberating as well as cramming school students felt less regret about their affiliation over time. This result is consistent with the findings of previous studies (that the pain of regrettable action decreases over time). With respect to satisfaction, there was also a significant interaction between time and affiliation,  $F(2, 137) = 12.41, p < .001$ , indicating that cramming school students' levels of satisfaction increased over time, although they felt less satisfaction than university students with regard to their affiliation immediately after it was determined. In terms of disappointment, there were significant interactions between time and the deliberate decision-making style,  $F(1, 136) = 9.28, p < .001$ , and also between time and affiliation,  $F(2, 136) = 9.38, p < .001$ . These findings indicate that, over time, cramming school students who decided after deliberating appear to have felt less disappointed about attending cramming school.

This study supported the results of previous studies (e.g., Gilovich & Medvec, 1995; Gilovich, et al., 1998), which have suggested that regret is affected by whether or not people take some action. Cramming school students in this study that failed the entrance examination had less regret over time (Table 3), suggesting that action regret is likely to be reduced over time.

Furthermore, we found that the high-deliberate type style affected negative emotions such as regret and disappointment by reducing such emotions over time. It is likely that the deliberate decision-making style helps people to avoid negative emotions when making decisions. This finding suggests that people can cope well with negative emotions that are caused by their failures, or with bad results, if they deliberately make decisions.

However, the deliberate decision-making style did not affect positive emotions such as satisfaction. One of the reasons for this might be the ceiling effect. This is suggested by the high mean scores for immediate satisfaction of low and high deliberate-type people that entered universities of their first choice (4.59 and 4.56, respectively). The effects of the ceiling effect should be further investigated in future studies.

*Effects of the Deliberate Decision-Making Style, Affiliation, and Time on Coping With Rregret*

Table 4 depicts the means and standard deviations of each item of coping methods and the correlation coefficient matrix. The result indicated that the correlations between rationalization and the deliberate decision-making style are significant. To clarify the effects of the interactions with the deliberate decision-making style, affiliation, and time on coping methods on each coping, we examine the effects by using ANOVA.

Each coping with regret score was analyzed using a 2 (deliberate decision-making style)  $\times$  3 (affiliation)  $\times$  2 (time) ANOVA with time as a repeated factor. Participants were excluded if their regret scores in the immediate aftermath and at present were 1 and 1, 1 and 2, 2 and 1, or 2 and 2, respectively. The responses of 67 students (28 males and 39 females) were used for this analysis (see Table 5).

Table 4. Means, Standard Deviations, and correlation coefficients Matrix of Decision-Making Style and Each Emotion ( $N = 67$ )

Item	<i>M</i>	<i>SD</i>	item 1	2	3	4	5	6
Decision-making style								
1. Deliberate	3.70	1.23						
Rationalization								
2. Immediate aftermath	3.46	1.09	<b>.30</b>					
3. At present	3.61	1.07	<b>.29</b>	<b>.64</b>				
Improvement with greater effort								
4. Immediate aftermath	3.60	1.06	.06	.22	<b>.39</b>			
5. At present	3.52	1.09	.20	.16	<b>.36</b>	<b>.76</b>		
Change own action								
6. Immediate aftermath	2.24	1.00	-.03	<b>.31</b>	.10	.05	-.06	
7. At present	2.13	1.03	-.09	.20	-.03	-.08	-.21	<b>.85</b>

*Note.* Minimum score = 1 and maximum score = 5. Correlation coefficients with  $|r| \geq .29$  are significant at  $p < .05$ . They are presented in the bold type.

There was a significant main effect of the deliberate decision-making style on the rationalization scores,  $F(1, 61) = 6.01, p < .05$ . In comparison with low-deliberate type decision-makers, high-deliberate type decision-makers had a predilection to think that the outcome of their decision (the university or cramming school entered) would be beneficial later in life.

There were significant main effects of the deliberate decision-making style,  $F(1, 61) = 4.25, p < .05$ , and choice behavior,  $F(1, 61) = 6.31, p < .001$ , on improvement with greater effort. These findings suggest that students who use high-deliberate type decision-making or cramming school students are more likely to make the necessary efforts to accomplish their goals. For example, they believe that if they put their best efforts (e.g., by studying hard and receiving qualifications), they can secure admission to their first-choice company (or university).

There were marginally significant interactions between time and the deliberate decision-making style,  $F(1, 61) = 3.35, p < .10$ , and between time and choice behavior,  $F(2, 61) = 2.54, p < .10$ , on changing one's own action response. Thus, it appears that over time, high-deliberate type decision-makers and cramming school students tend to convert inaction (e.g., choosing the option with a high success rate) into action (taking a risk and accepting a challenge).

This finding indicated that compared with low-deliberate type decision-makers, high-deliberate type decision-makers were more likely to cope with regret by using

Table 5. Means and Standard Deviations of Each Coping with Regret by Decision-Making Style, Affiliation, and Time ( $n = 67$ )

Item	Low deliberate-type						High deliberate-type					
	First choice ( $n = 7$ )		Second choice (10)		Cramming school (11)		First choice (9)		Second choice (23)		Cramming school (7)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Rationalization												
Immediate aftermath	3.29	.76	2.80	1.32	3.45	1.21	4.22	.83	3.39	.89	3.86	1.35
At present	3.43	.79	3.30	1.34	3.27	1.42	4.00	1.12	3.65	.71	4.14	1.22
Improvement with greater effort												
Immediate aftermath	2.57	.54	3.50	1.27	4.18	.75	3.44	1.33	3.52	.85	4.29	1.11
At present	2.57	.54	3.00	1.05	4.00	.78	3.89	1.27	3.43	1.04	4.29	1.11
Change own action												
Immediate aftermath	2.29	.95	2.00	.82	2.82	.75	2.33	1.23	1.87	1.01	2.71	.95
At present	2.57	.79	2.00	.82	2.55	.69	2.00	1.41	1.87	1.18	2.29	.76

*Note.* Minimum score = 1 and maximum score = 5. Values in parentheses represent the number of responses. First choice: university students who entered first-choice universities, Second choice: university students who entered a university other than that of their first choice, Cramming school: cramming school students who failed entrance examinations.

rationalization and improvement with greater effort in the real case of high school students' decision-making.

### GENERAL DISCUSSION

The results of the present study indicated that the deliberate decision-making style not only affects career decision-making processes but is also useful in avoiding negative emotions and coping with regret.

The deliberate decision-making style, drawing upon experience, and gathering information are important factors that connect the choice-behavior decision-making process with the goal-achievement-behavior decision-making process. This model not only describes the relationship between factors more concretely, as shown in previous researches, but also explains the aspects of SCCT (Lent et al., 1994). Moreover, the high-deliberate type decision-making style affects negative emotions about decisions made, reducing them over time and helping decision makers to cope with regret by using rationalization and making self-improvements. These findings suggest that the factors affect not only career decision-making but also "career indecision-making" (e.g., Germeijs & De Boeck, 2003; Saka, Gati & Kelly, 2008). Therefore, it is important to encourage students to acquire these factors, at appropriate times and by using effective training approaches.

Regarding the issue of appropriate timing, it is necessary to encourage students to deliberate on their academic careers and gather appropriate information in the third year of high school, rather than in the first or second years. This is because it is considered that high school students' maturity regarding career decision-making is low in the first or second year of high school, but it increases gradually in the third year (Germeijs & Verschueren, 2006; Urakami, 1993).

It is also important to guide students with the aim of facilitating their self-actualization (e.g., understanding their own aptitudes). Self-actualization requires deliberate thought about oneself. In order to facilitate their self-actualization, Adachi (1990) argued that it is effective to guide students from the metacognitive viewpoint of career counseling (e.g., "Are you clearly aware of what you want to become in the future?"). It appears that self-actualization also affects self-efficacy, which relates to motivation (Matsui & Onglatco, 1992) and goal attainment (Bandura & Cervone, 1983). It is likely that students can avoid career indecision by using the deliberate decision-making style and through enhanced career self-efficacy, which are both facilitated by self-actualization.

In order to avoid regret and disappointment and to remain satisfied, it is reasonable to conclude that high school students should be encouraged to make deliberate decisions regarding their future academic plans. Moreover, this approach will help students consider the positive aspects of their affiliation and to cope well with negative emotions, even if they feel regret regarding their affiliation after graduation.

In future studies, we will attempt to clarify how students collect information when

judging their aptitudes and career prospects as well as the types of information that they focus on. Confirmation bias is the tendency to accept information that is consistent with one's ideas and beliefs and to resist information that is not consistent (Lord, Ross, & Lepper, 1979). To avoid this bias, critical thinking may be needed (Zechmeister & Johnson, 1992).

With respect to the notion of a temporal change in emotion and coping, the participants did not reply to the questions (in real time) about emotion and coping immediately after decision-making. Future research should investigate the period immediately after decision-making as well as long-term responses by focusing on the data collected from high school graduates.

Finally, whether this research can apply to career counseling for students of other cultures is open to discussion. All the relationships between the factors and patterns of regret resemble those identified in previous studies, suggesting that our findings may apply to other cultures. In the future, a cross-cultural approach will be needed to examine them with regard to career counseling.

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