

The Conceptualization and Validation of Emotional Complexity¹

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This study focused on the emotional complexity as an individual difference variable. Emotional Complexity Coding Scheme(ECCS) has been developed based on Harter's(1986) four developmental levels of emotion to measure individual's complexity in processing emotion-related information. In Study 1, 4 stimuli from TAT and 2 stimuli from KCAT were used to elicit emotional responses which were rated by two raters according to the ECCS. Cognitive complexity was measured using a questionnaire concerning the distribution of bone-marrow. The results revealed a high internal consistency as well as inter-rater reliability of ECCS. Also, a low negative correlation($r=-.26$, $p<.05$) was found between emotional complexity and cognitive complexity. Emotionally complex individuals were found to have more clear experience of emotions with better coping ability, to be more empathetic toward others, and actively engaged in exchange of emotional support with others.

In Study 2, the hypothesis that emotionally complex individuals are better at accurate understanding of others' emotions by having the subjects listen to a recorded tape from which they identified the emotions and the intensity of the emotions felt by 4 speakers in emotional situations. The results showed that emotionally complex individuals were better in both identifying others' felt emotions and rating their intensity. Lastly, suggestions and implications for the future investigations are discussed.

The term complexity has numerous meanings in various frameworks(e.g., number of dimensions in multidimensional spatial representation; number of features, feature sets, feature redundancies, and feature articulation in feature set representation; levels of hierarchy, number of conceptual nodes, and distance between nodes in hierarchical tree representation; and number of nodes and interconnection among nodes in semantic network structure; Linville, 1982a). The common assumption shared by these frameworks is the existence of a certain structure or processing with variability in complexity. Hence, a small number of

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differentiation and integration would denote a simple structure or processing, while a large number of differentiation and integration would imply a complex structure or processing.

In the cognitive complexity paradigm, the concepts of differentiation and integration were used originally to investigate the complexity as a variable which influences people's perceptions and evaluations of events(Vannoy, 1965). The trait aspect of the cognitive complexity was first termed and theorized as *conceptual complexity*, which reflected the information-processing capabilities of the individual(Harvey et al., 1961; Schroder et al., 1967). According to Schroder, Driver, and Streufert(1967), the general dimension of simplicity-complexity of information processing can be described by the combination of differentiation and integration which constitutes number of gradation or structural levels. Simple structures interpret stimuli in a unidimensional manner, generally with rigid rules of integration. Individuals who function at this level evaluate stimuli rigidly, reject dissonant information in order to minimize conflict, tend to engage in categorical black-white thinking, and show a general inability to understand the perspective of others(Vannoy, 1965; Porter & Suedfeld, 1981). At the complex end of the continuum, processing is open and flexible with individuals being able to make and simultaneously consider the new interpretations of the same event. These individuals use more complex rules to interrelate the perspectives, seek more information in general, and display tolerance for uncertainty(Porter & Suedfeld, 1981).

Parallel to the above line of work is the body of research that investigates the situational antecedents of cognitive complexity. Comparable to conceptual complexity as a personality variable, the pioneering works of Suedfeld's group(e.g., Suedfeld & Tetlock, 1977; Suedfeld, Tetlock, & Streufelt, 1992) have used the

score	characteristic
1	no differentiation, no integration
2	transitional
3	differentiation, no integration
4	transitional
5	differentiation, integration
6	transitional
7	high differentiation, high integration

Fig. 1. Integrative Complexity Scoring(Suedfeld, 1994).

term *integrative complexity* to denote the changes in information processing due to situational factors, such as personal and societal stress(e.g., Porter & Suedfeld, 1981; Suedfeld, 1994; Suedfeld & Granatstein, 1995), accountability(e.g., Tetlock, 1983), and significant life events, such as death of a parent(Suedfeld & Bluck, 1993). Typically measured using Paragraph Completion Test(PCT), integrative complexity is scored along a 7-point scale according to the degree of differentiation and integration(e.g., Suedfeld, 1994; Tetlock, Peterson, & Berry, 1993).

Figure 1 provides the scoring scheme for integrative complexity. The score of 1 denotes no differentiation and integration; 3 denotes the presence of differentiation but no integration; 5 indicates the presence of both differentiation and integration; and 7 indicates a high degree of integration. The score of 2, 4, and 6 each reflects the transitional point.

On Cognitive Processing of Emotion: A Divergent Path

The connection between the cognitive complexity and the complexity in processing of emotion-related information, therefore, may seem obvious. It is generally accepted that emotional experiences depend on at least some cognitive processes that involve interpretation and evaluation of states, expression, situations, behaviors of others, and beliefs about what can be expected(Lewis, 1993). For example, Lewis provides a

developmental evidence that a new class of self-conscious emotions which include embarrassment, empathy, and envy, is given rise to by a new cognitive capacity, or the emergence of consciousness of objective self-awareness (self-referential behavior) about the second half of the second year after birth. Then, with the acquisition of ability to evaluate one's behavior against certain standards, self-conscious evaluative emotions, including pride and guilt, among others, are experienced.

Furthermore, the view that the elaboration of emotional complexity is accompanied by greater cognitive ability is consistent with other models of development, such as Piaget's conception of moral development in which the moral judgment becomes more elaborate with acquisition of high cognitive capacities (Crain, 1992). According to Piaget, there is not only quantitative growth, but also qualitative transformation in moral judgment in accordance with cognitive development.

While the above developmental evidences demonstrate that the development of cognitive capacities is a prerequisite for emotional development, there are, however, studies suggesting that there is no definite one-to-one correspondence between cognitive and emotional development. For instance, in a longitudinal study conducted on infants from 12 to 23 weeks of age, Lewis (1993) found no evidence that a change in emotion expression parallels the cognitive development. In his study, the infants' sensory motor skills, as well as the emotional responses during and after separation-reunion episodes with their mothers, were rated on weekly basis. Specifically, expressions of anger and joy and gazing showed no observable developmental shift comparable to cognitive shifts. Also, the infant who experienced negative emotion toward mother during the early period (12 - 14 weeks) subsequently displayed lower cognitive performance,

while higher cognitive functioning was associated with negative emotional experience during the later period (15 - 23 weeks). Such findings did not support the hypothesis of unidirectional cognition-emotion effects in either direction. Furthermore, many scholars emphasize emotion not as a passive outcome of the developmental and situational factors but rather as an active organizer that shape development (see Fisher et al, 1990 for review).

Besides the developmental evidences, some recent findings directly challenge the notion that cognitive complexity parallels emotional complexity. Tetlock and his colleagues (1993), for instance, found that integrative complexity has two faces, one to the individual self and the other to those around him. In their study, integrative complexity scores of master of business administration (MBA) candidates were correlated with an extensive range of self-report, observer-rating, semi-projective, and managerial-simulation measures. They found that although the measures of empathy on self-report measures correlated positively with integrative complexity, observers reported the cognitively complex subjects as unkind, bossy, inconsiderate, cold, unkind, and unsympathetic. Indeed, while the integratively complex MBA candidates were rated as being quite competent in their work, they were not seen as being equally competent in terms of emotion and interpersonal relationships. Interestingly, while the cognitively complex MBA candidates reported themselves as being insensitive to others, even though they believed themselves to be quite capable of empathetic understanding.

The results of the above study and others (e.g., Suedfeld, 1992; Tetlock, 1986; Linville, 1982b) raise the question whether cognitive complexity is a generalized attribute or one that has degrees varying according to specific domains. To this question, Feist (1994) strongly argues that complexity is domain

specific and predicts that if research were conducted on the temporal stability of complexity within a particular domain across time, there would be moderate to high consistency. He investigated this hypothesis by examining the integrative complexity of scientists toward research and teaching. He found that being a complex thinker about research revealed nothing about whether the scientist will be a complex thinker about teaching, and vice versa. Furthermore, research complexity was correlated negatively with observer report of possession of social poise, sensitivity to others' demands, and giving behavior. On the other hand, scientists high in teaching complexity were seen to be warm, charming, and non-condescending.

As suggested by the above results, people may differ in their dispositions to think complexly about certain topics and not others. To this end, individuals also may differ in their dispositions to think complexly about emotional aspects of those topics or events. In other words, what we suggest is that processing of emotion-related information or knowledge may constitute a separate process from a general fact-based information processing and that individual difference exist in the complexity of emotional organization and processing. Similarly, Emde(1984) has argued that emotions involve various contextual meanings with different individuals which are often arranged hierarchically at different levels of organization and having varying degrees of stability or change. The underlying assumption has been that there exists a systematic organization with which emotion-related information are processed, stored, and retrieved and that individuals differ in the degree of complexity of such organization. In fact, numerous researchers have already conceptualized the intrapsychic emotional structure to have a field of universe(Scherer & Wallbot, 1994), different phenomenological levels(i.e., individual, interpersonal, and representational; Parkinson, 1995), and

representations(hierarchical organization; Conway & Bekerian, 1987, Shaver, Schwartz, & Kirson, O'Conner, 1987: associative network; Bower, 1981; Anderson & Bower, 1973: dimensional representation; Russell, 1983; 1980; Watson, Clark, Tellegen, 1988: and categorical representation; e.g., Ekman, 1994; 1992). These conceptions share the common assumption that emotions are experienced after antecedent events, and the interpretation of such events are hinged upon the pre-existing emotion representation structure that is somewhat stable in individuals. Unfortunately, however, while the complexity of the emotional process and organization has been hypothesized to be different according to the individuals(e.g., Harter, 1986a), it has never been tested empirically.

In sum, the main hypothesis that can be derived from the above discussion is that the level of elaboration and refinement of emotion-related representations, i.e., the differentiation and the integration of emotional aspects, in an individual may reflect the complexity of emotion structure of that individual and that such structure is quite stable over time. In turn, individuals with complex emotion structure may be better at identifying and understanding various emotions in self and others.

From the developmental and clinical perspective, emotional complexity may reflect the ability to differentiate not only between the various emotions, but also to integrate into a whole the conflicting feelings attached to a single target. The lack of such ability is best illustrated by borderline personality where the dominant emotional organization is a split between positive and negative(Kernberg, 1976). People are divided into two black-and-white categories, those who are on his side and those who against him or her and not to be trusted. In the extreme case, the person will even treat an individual as two different people, one good and one bad. Though borderline personality may

have been an extreme example, it effectively demonstrates that certain emotional organization is more superior to other's, i.e., better integrated and, therefore, more complex, emotional organization is superior to the simple and fractioned emotional organization.

Emotional complexity and emotional variables

Emotional development does not occur in a vacuum. Because emotion involves an object with contextual meaning, the interaction between the person and the environment is important in emotional development. This point is well emphasized by Lazarus (1994):

An emotion is the result not solely of a personality trait(e.g., a goal or belief) or a property of the environment(e.g., external demand, constraint, or resource), but depends on a functional conjunction between them.

The emergence of different emotional capacities in children reflects different adaptational demands in the environment along the developmental sequence. Children not only develop coping strategies across a range of emotions, but also learn to rely on their emotional experiences as guidelines for the future interactions with the environment. Recently, there has been an attempt to formulate specific guidelines for emotional development under the framework of which has now become widely known as the Emotional Intelligence (EQ).

Numerous emotion theorists studying EQ have conceptualized three broad categories of emotional capabilities in which individual differences exist, but which can be developed or acquired: 1)understanding ones own emotions, 2)understanding others' emotions, and 3)understanding the social world(Dunn, 1994; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995). It

can be observed that three components involve the process of differentiating and integrating various emotion-related informations. One's own feeling state must be correctly identified among various emotions (e.g., happiness vs. disappointment) and attributed to the correct source(e.g., receiving a present vs. finding out that you already have it). In turn, this will enable the emotion to be expressed in a reasonable fashion to the appropriate target. Moreover, others' emotions have to be somewhat correctly identified and interpreted(again, involving differentiation among the various emotions, their causes, and targets) in order to react and reciprocate appropriately for the maintenance of social relationships.

While such emotional capabilities involve the process of differentiation and integration and cognitive complexity may be a good predictor of such ability, the evidences presented in the beginning section of the present article suggested otherwise. It is more probable that consideration for emotional aspects or domain may involve a separate process independent of the general cognitive information processing. While this view is widely held by EQ theorists who demonstrate that IQ and emotional intelligence are separate competencies(e.g., Block, 1995), the independence of the emotional and cognitive organization could only have been suggested due to the fact that emotional complexity as an individual difference variable has not been conceptualized. In fact, theorists such as Gardner (1993) have long argued a compartmental view of intelligence in which cognitive abilities, such as verbal and mathematical competencies, are differentiated from interpersonal and intrapersonal intelligence.

If the hypothesis that there exists separate organizations for emotion and general cognition, then we can expect emotional complexity to be closely related to certain aspects of EQ, namely the certainty and clarity of one's emotional experiences, while cognitive com-

plexity is not. The factors of emotional awareness, clarity, and coping included in Trait Meta-Mood Scale (TMMS; Salovey et al., 1995) were proposed to be the most characteristic of EQ. Other emotion-related variables, such as emotion labeling and monitoring in Mood Awareness Scale(MAS; Swinkels & Guilliano, 1995) and ambivalence over emotional expressiveness (AEQ; King & Emmons, 1990), have shown consistency in emotional characteristics of individuals and have demonstrated close relationships with the factors of TMMS. Of particular interest is the fact that while MAS measures the process of becoming aware of one's mood state, those with excessive mood monitoring tendencies are prone to depression. On the other hand, those with ability to label their emotions more clearly are better at regulating their emotions adaptively, hence show better emotional coping ability. In sum, it can be predicted that emotional complexity will be positively correlated with all three factors of TMMS and emotion labeling in MAS. On the other hand, mood monitoring, which is a dispositional tendency(Lee & Lee, 1997), is not hypothesized to be significantly related to emotional complexity.

In terms of behavioral aspects of emotion, i.e., emotional expressiveness, no prediction based on emotional complexity could be derived. Since emotional complexity is formulated to be the "hardware", rather than the "software" of emotion, it is hypothesized that emotional complexity will not be related to emotional expressiveness, as measured by Emotion Expressivity Questionnaire(EEQ; King & Emmons, 1990).

The relationship between emotional complexity and personality variables

When Emde(1984) argued that emotions involve various contextual meanings to different individuals which are arranged hierarchically at the various levels of organization, he was in fact referring to a stable

individual difference in emotional structure and organization. For example, in a study examining the effects of the attachment style during the infancy(Bowlby, 1980), it was found that, while secure children and adults expressed emotions relatively freely and felt soothed quickly when an attachment figure responded to their negative emotion, the avoidant children and adults seemed to have learned to deny, suppress, or the "deactivate" the emotions that have not led to satisfactory responses from their parents early in life. Furthermore, anxious/ambivalent children and adults found protesting to be an effective means to gain attention and support of attachment figures. Such observation strongly points to the possibility that emotional complexity is closely related to certain personality variables that are emotion-laden¹⁾.

Among the personality variables, Psychoticism, Neuroticism, and Empathy have been numerous identified as being emotional traits of the individuals. While Psychoticism is marked by the lack of sympathy and insensitivity to other's feelings, people high in Neuroticism show high emotional variability in one's emotional state(Lee, 1997). Lastly, Empathy is related to attending to others' emotional states, that is, not only a detection or inference of someone else's emotion in a given situation, but also the feeling of this same emotion on the part of the observer(Ricard & Kamberk-Kilicci, 1995). Hence, it can be predicted that Neuroticism and Empathy is positively correlated with emotional complexity, while Psychoticism is negatively correlated with emotional complexity.

Emotional complexity and emotional social support

Social support, or supportive behavior, can be

1) While certain relationships may exist between emotional complexity and the attachment styles, the topic will not be extensively discussed as it is beyond the scope of the present paper.

classified largely into emotional support, instrumental support, and informational support (Kim, 1997). Among these, emotional support is hypothesized to be closely related to emotional complexity. Because emotionally complex individuals are more clear about one's own emotional state, they may be more active in soliciting emotional support from others when experiencing negative emotion as compared to those whose emotional experience is less clear. This view is consistent with the finding that AEQ is negatively related to emotional support received (Lee, Hwang, Han, & Min, 1997). Similarly, a positive relationship between emotional complexity and emotional support provided can be hypothesized. A better understanding of others' emotions will invariably lead to more opportunity to lend appropriate emotional support to others.

The emotional complexity measure

Summing up the above studies, it can be hypothesized that emotional development involves three differential aspects: 1) emotional valences (positive vs. negative), 2) emotion labels within each emotional valences (e.g., in positive valence, emotion labels such as happy, content, glad, pleased, loving, liking; in negative valence, angry, sad, disappointed, depressed, discontent), and 3) emotional objects (e.g., self vs. others; cause vs. target of emotion) and one integrative aspect of emotion: different emotions co-occurring at the same toward an emotional object or target (e.g., fear and curiosity toward a stranger, love and jealousy toward a lover, a bittersweet memory).

The above hypothesis is consistent with the results obtained from the various studies on children's emotional development. Specifically, when Harter (1986a) asked the children of the various age groups what kinds of situations would bring about different emotions all at the same time, she found the 5 levels of emotional development sequence based on the differ-

entiation and integration of emotional valences and objects. Children under the age of five generally failed to recognize that more than one emotion could occur at the same time at one target, while by the age of seven, children began to recognize that more than one emotion of the same valence (e.g., happy and proud, and angry and unhappy) can occur at a target at the same time, i.e., differentiation at the emotion level. At the age of nine, more than one emotion of the same valence can be associated with different targets simultaneously, hence the differentiation among the emotion targets occur. By the age of ten, more elaborate differentiation occurs with more than one emotion of the different valence being associated with different targets (e.g., being happy that grandparents came and being disappointed that they didn't bring any presents) at a given time. The highest level of emotional development occurs by the age of eleven, where the different aspects of a single associated with various positive and negative emotions are integrated into a coherent whole.

Such levels of emotional development were found in other studies using different methods. For example, Donaldson and Westerman (1986) read emotional narratives to children and asked what kinds of emotions the characters in the story would feel. As a result, they also found a similar 4 levels of emotional development among children. Other convergent evidences from the studies involving children's understanding of mixed emotions through pictures or photographs (e.g., Kestenbaum & Geldman, 1995) and inconsistency between facial expressions and situational cues (Wiggers & Van-Lieshout, 1985) strongly support the idea that emotional development occurs in the process of differentiating and integrating the emotions and the targets of those emotions.

Based on the Harter's (1986a) 5 levels of emotional development sequence, Emotional Complexity Coding

Scheme(ECCS) has been constructed(see Appendix A). Similar to integrative complexity, the Paragraph Completion Task method was used to rate the individual responses along the 7-point scale, from no emotional interpretation of the stimulus(1) to attribution of different valenced emotions to the same target(7).

STUDY 1

Method

Subjects

68 Catholic University undergraduates and 25 Seoul National University undergraduates taking Introductory Personality Psychology course participated in the present study. Among them, 3 subjects from the Catholic University were not included in the analysis because they either did not follow the instructions or did not complete the task. Therefore, the final analysis was performed on 90 subjects(male=24, female=66) and with the mean age of 22.9(SD=3.25).

Measures

A. Measures of Complexity

Cognitive Complexity. The measure of cognitive complexity was obtained by using two different forms of Bone-marrow Transplant Questionnaire(BTQ). Both forms consisted of the identical first page with general instructions. On the second page, general facts concerning bone-marrow transplants were provided, explaining that there is a shortage in the supply of bone-marrow available given the number of patients, while there is no existing legal guidelines for the distribution of the bone-marrow. Based on the six criteria provided in the questionnaire(patients occupation, age, family, amount of bone-marrow needed, chance of survival after the operation, and ability to pay for the operation), the subjects were first asked to rank the importance of each criterion in distributing

the bone-marrow from least important criterion(1) to most important criterion(6). Secondly, the subjects were asked to write down as descriptively as possible their reasons, thoughts, or feelings about their responses to the above question. The third question asked the subjects to rate the importance of each criterion in distributing bone-marrow from *absolutely unimportant*(0) to *absolutely important*(9), regardless of the ranking they previously assigned to each criterion. Lastly, the subjects were asked to indicate their age and whether someone they knew had previously received bone-marrow transplant. In the alternative form, the first and the third question were switched for the purpose of counter-balancing, with the other parts of the package remaining constant.

Emotional Complexity. The measure of emotional complexity was obtained through Illustration Appropriateness Questionnaire(IAQ). IAQ consisted of 5 pages with the first page informing the students that the packet is for the purpose of studying the effectiveness of the illustrations presented in novels in conveying information to readers. The second page provided the subjects with one of the 6 pictures with different number of characters described below. Then, the subjects were asked to describe 1)the situation and 2)the thoughts and feelings a particular character(A) has toward the situation and others, including character(B). The second page asked to describe the thoughts and feelings that the character(B) has toward the situation and others, including character(A). The stimulus pictures consisted of 4 pictures from Thematic Apperception Test(TAT) and 2 pictures from the Korean Children's Apperception Test(KCAT: Kim, Seo, Lee, & Hong, 1993). The following are the brief descriptions of the pictures obtained from TAT: 1)a young woman sitting on a sofa turning around to see a middle-aged man addressing her, 2)a woman and a man in embrace, with the man looking away from the

young woman, 3) a young woman holding a book, with a man and a middle-aged woman in the background, and 4) an old woman and a young man both standing, with the old woman facing away from the young man. 2 pictures from KCAT were 1) three monkeys in a classroom setting, with one monkey standing and reading a book and 2) 4 monkeys inside a room, with 2 monkeys talking to each other and 1 monkey petting a young monkey on the head. The pictures from KCAT were included because they reflected certain emotional aspects relevant to the undergraduate sample, such as pride, fear of speaking in public, and relationship with parents (see Kim et al., 1993). The next two pages were identical to the second and third page, except for the stimulus picture which was switched with one of the remaining 5 stimulus pictures. The order of the pictures presented was mixed for the purpose of counter-balancing.

B. Emotion and Personality Measures

Emotional variables. Various aspects of emotion were measured using the following measures. The 21-item revised Trait Meta-Mood Scale (TMMS) constructed by Salovey et al. (1995) was used to measure emotion clarity, awareness and coping. As the name suggests, this scale measures the trait aspects of the individuals' emotion and is hypothesized to be highly related to what has been termed as the emotional intelligence. The typical item for clarity (11 items), awareness (5 items), and coping (5 items) are "I am usually very clear about what I am feeling," "I think often about my feelings," and "I try to think good thought no matter how badly I may feel," respectively. Mood Awareness Scale (MAS; Swinkels & Guilliano, 1995) was also administered, which consists of emotion monitoring and labeling, each measured by 5 items. Emotion monitoring is said to reflect the attentiveness to one's emotional state (e.g., "I often evaluate how I feel"), while emotion labeling

measures the clarity with which emotions are experienced and interpreted (e.g., "I am usually very clear about my feelings"). In addition, 28-item Ambivalence over Emotional expressiveness Questionnaire (AEQ; King & Emmons, 1990), which reflects the individuals' striving in the experience and the expression of emotions, was included. Typical items read, "I sometimes have difficulty expressing what I really feel," and "Even though I try to suppress my anger, I wish others knew how I feel". Finally, 16-item Emotion Expressiveness Questionnaire (EEQ; King & Emmons, 1990) was added to examine the expression aspect of emotion. EEQ consists of three factors, namely the expressiveness of positive emotions (e.g., "I laugh very much"; 7 items), negative emotions (e.g., "I always express my disappointment when things didn't go the way I wanted"; 4 items), and intimacy (e.g., "I often tell people that I love them"; 5 items). All of the scales presented above were rated along the 5-point scale from strongly disagree (1) to strongly agree (5).

Personality variables. Three personality traits, Empathy, Neuroticism, and Psychoticism, were measured using Korean Eysenck Personality Questionnaire (Lee, 1997), which consisted of 12 "yes or no" items for each trait. People empathetic toward others are identified to show a deep interest in other people's problems, place importance in considering other's emotions, and are easily influenced by the emotional states of others. Hence, a typical item of empathy measure reads, "Do you feel a deep sympathy toward a friend in trouble?" Neuroticism is also related to emotion in that people high in neuroticism are sensitive to changes in one's emotion and places much importance in one's emotional state. A typical item for neuroticism reads, "Are your feelings easily hurt?" And lastly, psychoticism is associated with being hostile and unemotional. People high in psycho-

ticism are insensitive to other's emotions and are self-centered. Therefore, "Are you less concerned about what is right and wrong compared to other people?(-)" is a typical item for this measure.

C. Emotional Social Support Measures

Emotional support received. 13 "yes or no" items pertaining to the emotional support in Social Support Scale(ESSS; Kim, 1987) was used to measure the amount of emotional support received by the individual. Here, although the items inquire about the perceived availability, rather than the cases where the emotional support was actually received by the individual, it was assumed that the perception of availability of support is reflective of the emotional support previously received by the individual. Items included in this scale are "These days when I have something to worry about, I keep it to myself" and "There is no one with whom I could talk about my loneliness and depression."

Emotional support provided. 7 items from the above emotional support were selected and adapted to for the purpose of measuring the emotional support provided to others. The items were selected based on whether they could be modified to describe the actual instances where emotional support was provided by the subjects. For example, "These days when I have something to worry about, I keep it to myself" was not included because it could not be modified to fit the description of emotional support provided. Hence, a typical item included in the scale reads, "There is someone who has talked to me about his or her sexual problems."

Procedure

The subjects were each given an IAQ package and a BTQ package. They were instructed to complete IAQ first and then to complete BTQ. They were told that the packages were for separate studies and that

they should read the instructions on the packages carefully. After reading the instructions on the packages, they were told to answer the questions in detail as possible. Upon the completion of both forms, they were instructed to fill out the questionnaire packet containing emotion and personality scales. Upon completion, the packages were collected.

Results

Cognitive and Emotional Complexity Ratings

Cognitive complexity and emotional complexity were each rated separately by two raters familiar and trained with the coding schemes. The ratings were carried out after carrying out a training session where the reliability of the ratings of the random samples reached the level of .70. The scores showing significant difference between the raters were adjusted after the discussion between the rater. The resulting interrater reliability for cognitive complexity and emotional complexity reached .81($p < .001$) and .83($p < .001$), respectively.

Preliminary Analysis

The mean scores for the cognitive complexity measure and emotional complexity measure was 2.94($SD=1.21$) and 4.43($SD=1.89$), respectively. The results of the cognitive complexity was consistent with the those of previous studies using a similar method, but on different topics.

No significant sex difference was observed in both cognitive($t=-.469$, n.s.) and emotional complexity scores($t=.522$, n.s.), though this may be due to the sheer imbalance in number.

Furthermore, no observable difference was found in the cognitive complexity scores between the two alternative forms of BTQ($t=.125$, n.s.). The results of the analysis, therefore, are based on the combined responses to both forms.

Emotional Complexity Scores

The correlations between the scores received on each of the stimuli and the sum of the scores are provided in Table 1. Emotional complexity was found to be highly consistent as all correlations were above .80($p<.01$) except for the stimulus 1(i.e., three monkeys in a classroom) of KCAT($r=.68$, $p<.05$). The content analysis of the responses obtained from the KCAT stimuli revealed that the subjects either had difficulty in interpreting the feelings of the characters or did not interpret the situation as involving any sort of emotion. Furthermore, the emotional scores obtained from the TAT stimuli(pictures 1 to 4) were significantly higher than those obtained from the KCAT ($t=.421$, $p<.01$). Lastly, the coefficient α for the four responses obtained from each subject was .90.

Cognitive Complexity and Emotional Complexity Scores

Consistent with Hypothesis 1, a low negative correlation($r=-.261$, $p<.05$) was found between the scores of cognitive complexity and emotional complexity. As shown in Table 2, this trend seems to be mainly due to the effect of Stimulus 2(a man and a woman in embrace) of TAT, which shows a strong negative

correlation($r=-.4757$, $p<.01$) with cognitive complexity.

The content analysis of the responses for Stimulus 2 revealed that while those high in cognitive complexity tended to focus on the surrounding events, while those with low cognitive complexity focused on interpreting the emotional behavior, especially the facial expressions, of the characters in the stimuli. As predicted, no other significant relationship was found between the emotional complexity and cognitive complexity scores, although they were consistently found to be negatively related, with the exception of Stimulus 5.

Emotion Correlates of Cognitive and Emotional Complexity

Consistent with Hypothesis III, the results obtained from the correlational study reveal emotional complexity to be significantly related to various emotional variables, while cognitive complexity is not. This is shown in Table 3. Cognitive complexity was marginally correlated($r=.23$, $p<.07$) only with expressiveness of negative emotions in EEQ. Such result is consistent with the findings by Tetlock et al.(1993) where MBA candidates high in cognitive complexity were rated by observers as being insensitive and hostile.

Emotional complexity, on the other hand, yielded

Table 1. Correlations between Total Score and Each Stimulus

Stimulus	TAT				KCAT	
	1	2	3	4	5	6
Total Score	.8430*** (32)	.8508*** (29)	.9072*** (31)	.8963*** (29)	.6683* (28)	.8269* (31)

1. * $p<.05$, *** $p<.001$; 2. n is in parenthesis.

Table 2. Correlations between Cognitive Complexity and Emotional Complexity

Stimulus	TAT				KCAT		Total
	1	2	3	4	5	6	
Cognitive Complexity	-.0910 (32)	-.4757** (29)	-.2237 (31)	-.2585 (29)	.0624 (28)	-.2031 (31)	-.2610*

1. * $p<.05$, ** $p<.001$; 2. n is in parenthesis.

Table 3. Emotion Correlates of Cognitive Complexity and Emotional Complexity

Complexity	TMMS				MAS			EEQ				
	Awareness	Clarity	Coping	Sum	Labeling	Monitoring	Sum	AEQ	Positive	Negative	Intimacy	Sum
Cognitive	-.031	-.084	-.225	-.163	.033	-.142	-.114**	.033	.083	.235+	.003	.184
Emotion	.366**	.425**	.328*	.516**	.368*	.007	.246*	-.304*	.006	-.492**	.087	-.196

1. ** p <.01, * p <.05, + p <.07; 2. N = 90.

Table 4. Correlations between Complexity Measures and Personality and Social Support Measures

Complexity	EPQ			ESSS	
	Empathy	Psychoticism	Neuroticism	Provided	Received
Cognitive	-.189	-.202	-.057	-.326*	-.014
Emotion	.340*	-.105	.346*	.283*	.302*

1. * p <.05, 2. N = 90.

strong correlations with various emotion variables. As predicted, emotionally complex individuals experienced emotions more clearly as reflected by positive correlations between emotional complexity and emotion clarity ($r=.425$, $p<.01$) in TMMS and emotion labeling ($r=.368$, $p<.05$) in MAS. Further support for emotion clarity hypothesis is provided by a significant negative correlation ($r=.304$, $p<.05$) between emotional complexity and AEQ. Emotionally complex individuals were more aware of their emotions ($r=.366$, $p<.01$) and were better at coping ($r=.328$, $p<.05$) with negative emotions as reflected by the TMMS factors. No significant correlation ($r=.007$, n.s.), however, was found between emotional complexity and the amount of emotion monitoring and evaluation. This suggests that while emotionally complex individuals are both aware and clear about one's emotional states, they are not necessarily in constant rating and evaluation of their emotions. In terms of emotional expression, emotionally complex individuals are marked by a strong tendency of not expressing negative emotions, as shown by the significant negative correlation ($r=-.492$, $p<.01$) between emotional complexity and negative emotion expression of EEQ.

Personality Correlates of Cognitive and Emotional Complexity

Correlations between cognitive and emotional complexity and personality variables are presented in Table 4. As predicted, emotional complexity was found to be significantly correlated with the measure of empathy ($r=.340$, $p<.05$) and neuroticism ($r=.346$, $p<.05$). Although Psychoticism was negatively related to emotional complexity ($r=-.105$, n.s.), it did not reach the level of significance. None of the personality measures reach a significant level of correlation with cognitive complexity, although their direction was consistently negative.

Emotional Support and Cognitive and Emotional Complexity

Correlations between cognitive and emotional complexity and emotional social support (ESSS) are also provided in Table 4. While cognitive complexity was found to be significantly negatively related with emotional support provided ($r=-.326$, $p<.05$), it was not significantly related with the emotional support received. Once again, such result is consistent with Tetlock et al.'s (1993) finding that people high in cognitive complexity rated themselves as being inde-

pendent and insensitive to others. On the other hand, confirming the hypothesis of positive relationship between emotional complexity and emotional social support, the emotionally complex individuals were active exchangers of emotional support, both in giving ($r=.283$, $p<.05$) and receiving($r=.302$, $p<.05$).

STUDY 2

As supported by the results from the Study 1, emotionally complex individuals are better at clearly understanding one's own emotions. However, due to the nature of self-report form, it is difficult to determine whether the emotionally complex people have a better understanding of *other's* emotions than their emotionally simple counterparts. Indeed, it is possible that people may perceive themselves to be quite capable in accurately identifying and understanding one's and other's emotions when, in fact, that is not the case. Hence, the aim of this study was twofold: 1)internal consistency and test-retest reliability of emotional complexity measure was examined, and 2)the relationship between emotional complexity and accurate understanding of other's emotions was tested in an experimental setting.

Method

Subjects

54 Seoul National University undergraduates taking Introductory Personality Psychology course participated in the present study. Among them, 5 were omitted in the final analysis, because they failed to complete the test-retest. The results are based on the remaining 49 subjects(male=32, female=17) and with the mean age of 22.7(SD=1.93).

Measures

A. Measures of Complexity

Measure of Cognitive Complexity. The alternative form(A) of Bone-marrow Transplant Questionnaire (BTQ) was used to obtain cognitive complexity with a minor modification. It included the following questions in order to control for the motivational aspects of the subjects: "How important do you personally feel about the issue of bone-marrow transplant?" and "How interesting did you find this questionnaire?" Both were rated on 9-point scales from absolutely unimportant(1) to absolutely important(9) and absolutely uninteresting (1) to absolutely interesting(9), respectively.

Measure of Emotional Complexity. Illustration Appropriateness Questionnaire(IAQ) was used to assess the emotional complexity, also with minor modification. IAQ consisted of 4 pages with the first page containing the general instruction identical to the one used in Study 1. The second page provided the subjects with one of the following 3 pictures, counter-balanced to eliminate the ordering effect. It asked the subjects to write down in detail the situation and feelings and thoughts of the characters in the picture concerning the situation. The stimulus picture consisted of 3 of 4 pictures from Thematic Apperception Test (TAT) used in the Study 1 and found to have high discriminatory power. They are 1)a young woman sitting on a sofa turning around to see a middle-aged man addressing her, 2)a woman and a man in embrace, with the man looking away from the young woman, and 3)an old woman and a young man both standing, with the old woman facing away from the young man. The pictures from KCAT were not used because it was revealed in Study 1 that they were insufficient in eliciting emotional responses. The next two pages were identical to the second page, except for the stimulus picture which will be switched with one of the remaining 2 stimulus pictures.

B. Experimental Material

10 undergraduates performed an emotion recall task. They were asked to recall and describe either a very positive experience or a very negative experience. All recalled events were recorded on tape for the purpose of the present study. Among them, 4 recalled events similar in length (about 3 minutes) which were associated with strong and complex emotions were used: 1 positive experience and 3 negative experiences consisted of an unexpectedly encounter with an old friend, an argument with father, death of grandmother, and being hit by an older brother. Here, two were male and two were female respondents. After the recall task, the subjects completed the following measures.

Emotion Accuracy Measures. A checklist consisting of 80 emotion adjectives selected from 94 representative Korean emotion words (Ahn, Lee, & Kwon, 1994) was constructed for the purpose of identifying the experienced emotion. The respondents were asked to check all emotions that was experienced during the recalled event. Their responses were later used to determine the accurate understanding of other's emotion in the experiment. Also, 18 emotion adjectives which were found to be the subordinate emotion factors in the same study were rated based on the 9-point scale (0=not at all, 8=very much), in terms of the intensity with which they experienced those emotions. The responses obtained were later used to determine the accuracy of the subjects in inferring other's intensity of emotions experienced during an emotional event.

Procedure

The subjects completed both BTQ and IAQ in the classroom. They were instructed to complete IAQ first and then to complete BTQ. They were told that the packages were for separate studies and that they should read the instructions on the packages carefully.

After reading the instructions on the packages, they were told to answer the questions in detail as possible. Upon completion of both forms, the packages were then collected. Four weeks later, the 4 to 5 subjects were brought into the laboratory at a time for retest and the experiment. The subjects were given IAQ and asked to complete it again. They were told that this was re-administered in order to obtain additional information. They were also told that they were encouraged to describe a different situation, if they should remember what they wrote previously. The experimental procedure was conducted after everyone had completed the IAQ.

During the experiment, the subjects were informed that they will listen to four people each talking about an event that happened to them. The subjects were instructed to listen carefully to the each recorded event and then to respond to the emotion accuracy measures. Besides, the subjects also estimated the percentage of how well they understood the emotion experienced by the person recalling the event, and how certain they were of their answers. After rating all four taped contents, the subjects were debriefed about the experiment and the questions concerning the experiment were answered.

Results

Test-retest Reliability of Emotional Complexity

The mean scores for cognitive complexity, the initial administration and test-retest of emotional complexity were 3.10(SD=1.35), 4.03(SD=1.90), and 4.12(SD=2.11), respectively. 4-week test-retest reliability correlation of .74 was obtained by using the mean emotional complexity scores of the two raters in both the first administration and the test-retest.

Emotional Complexity Ratings and Cognitive Complexity

Scoring of emotional complexity was conducted through a similar procedure used in Study 1. The inter-rater reliability for emotional complexity and test-retest reached .84, and .85, respectively. The correlations between each of the emotion stimulus and the total score ranged from .82 to .88 and .83 to .91 in the initial administration and test-retest, respectively. Lastly, the coefficient α for the six emotion complexity scores obtained from each subject was .90 for initial administration and .91 for test-retest. In addition, a low non-significant negative correlation ($r = -.145$, n.s.) was obtained between initial measure of emotional complexity and cognitive complexity.

Emotion Accuracy Measures Coding

The responses of the subjects were coded in the following way. In the case of the emotion adjective checklist, the number of correct responses and false responses were summed for the purpose of the analysis. Here, when the subject checked the emotion adjective word checked initially by the person recalling the emotional event, it was coded as the correct response. Similarly, when the subject checked the emotion adjective word that was not checked by the person recalling the emotional event, it was coded as the incorrect response. Also, the number of false responses were subtracted from the correct responses in order to infer the rate of accurate identification of emotion.

In terms of emotional intensity, the over-rated and under-rated responses were summed separately to determine whether any significant correlations exist between over-rating and under-rating tendency and emotion complexity.

Hence, if the subject gave a rating of 7 on an emotion word when the initial rating of the person recalling the emotional event gave 4 on the same word, the resulting score was coded as 3-over-rating. Identical process was also applied in terms of under-rating. Lastly, the sum of the both types of responses were added in order to examine the relationship between total emotional intensity accuracy and emotional complexity.

Emotional Complexity and Emotion Identification

The correlations between emotional complexity and the rate of emotion identification as measured by correct and incorrect responses to emotion adjective checklist are provided in Table 5. As it was predicted, emotionally complex individuals gave more correct responses ($r = .30$, $p < .05$) and less incorrect responses ($r = .31$, $p < .05$). Furthermore, the rate of correct identification of emotion was even more strongly related with emotional complexity ($r = .56$, $p < .001$) when both correct and incorrect responses were taken into consideration. It is noteworthy that the number of correct responses was positively related to incorrect responses ($r = .43$, $p < .01$). In other words, even when the number of incorrect responses increased with the number of correct responses, people high in emotional complexity

Table 5. Correlations between Emotional Complexity and the Rate of Emotion Identification

	1	2	3	4
1. Emotion complexity	-			
2. Correct response	.3009*			
3. Incorrect response	-.3095*	.4254**		
4. Correct-incorrect	.5592***	.6794***	-.3750*	-

1. * $p < .05$, ** $p < .01$, *** $p < .001$ 2. N = 49

Table 6. Correlations between Emotional Complexity and Emotion Intensity Rating

	1	2	3	4
1. Emotional complexity	-			
2. Over-rating	-.344**	-		
3. Under-rating	.189	-.731**	-	
4. Total	-.306*	.694**	-.016	-

1. * $p < .05$, ** $p < .01$; 2. $N = 49$

were still making more correct and, at the same time, less incorrect responses.

Emotional Complexity and Emotion Intensity Rating

The correlations between emotional complexity and the ratings of emotion intensity are presented in Table 6. As predicted in the present study, emotionally complex individuals are more accurate in rating the intensity of the experienced emotions, as reflected by the significant negative correlation ($r = -.306$, $p < .05$) between emotion complexity and the total sum of the over- and under-ratings. Such negative correlation seems to be due to the negative relationship between emotional complexity and over-rating tendency ($r = -.344$, $p < .05$). It can be further observed that over-rating ($r = .694$, $p < .01$), not under-rating ($r = .016$, *n.s.*), is significantly related to the total of miss-rating. In other words, people high in emotional complexity were less likely to make extreme evaluations about the emotional experiences of others, hence they were more accurate in evaluating others' emotions.

SUMMARY & DISCUSSION

The present study focused on conceptualizing and validating emotional complexity. The emotional complexity measure developed in the present study, which was based on Harter's (1986a) 5 levels of emotional developmental sequence, was found to be highly

reliable and consistent. The results consistently showed that emotionally complex individuals are better at recognizing others' as well as their own emotions and that they are more prone to emphatic response. Observably, they were more active in terms of exchanging emotional support with others. Cognitively complex individuals, on the other hand, were not better at clearly recognizing their own emotions, not to mention the others' emotions. They were marked by being expressive of negative emotions and a tendency not to engage in the exchange of emotional support. These results were found to be consistent with those found in previous studies (Tetlock et al, 1993; Feist, 1994).

With the above results aside, the following issues should be considered in the future studies concerning emotional complexity. First, while this study made no predictions based on sex differences, it would definitely be a worthwhile investigation in the future. Although no sex difference was found in emotional complexity in the previous study dealing with 4-5 year old children (Kestenbaum & Geldman, 1995), differences might exist in the older population. Women are generally seen as being more in touch with emotional aspects (Haviland & Malatesta, 1981), as well as being actively engaged in the emotional social support system compared with men (Strokes & Levin, 1986). Hence, how this might be reflected by emotional complexity should be a worthy investigation.

Second, how the dynamics and the interactions between cognitive complexity and emotional complexity influences one's perceptions of the situation should also be investigated. In fact, the significant negative relationship between emotional complexity and cognitive complexity found in Study 1 suggests that emotional complexity and cognitive complexity are not totally exclusive. Indeed, a possibility exists that emotional complexity, similar to cognitive complexity,

is domain specific. In other words, an individual may think complexly about emotions involved in father-son situation and simply about self-friend situation. Therefore, the studies that investigate situational variables that determine the dominant mode of complexity could be very useful.

Thirdly, emotional complexity should be further investigated in light of various personality variables. The present study considered only three personality variables, namely Empathy, Neuroticism, and Psychoticism. Other variables of interest are Thinking-Feeling in BMTI, Agreeableness in Big Five Factors, and socialization. Particularly in terms of the Big Five Factors of personality, it was found in the recent work conducted in the organizational setting by Yoo, Kim, and Lee(1997) that Emotional Stability was positively related to sense of responsibility and performance on tasks while Agreeableness was negatively related to creativity and decision-making tasks. Therefore, the dynamics between these constructs and emotional complexity and how they can be applied to interpersonal and organizational setting is of particular interest.

Furthermore, identifying the nature of relationship between emotional complexity and the so called emotional intelligence should be useful both theoretically and in its application. High positive correlation between emotional complexity and the total score of TMMS suggest emotional complexity to be conceptually related to emotional intelligence. As it seems to be related to both clarity and labeling of experienced emotion, emotional complexity may be considered to be the structure, or hardware, constituting emotional intelligence. Indeed, no relationship was found between emotional complexity and expressiveness of intimacy and positive emotions. Since certain situations and interpersonal interactions involve complex emotions, the role of emotional complexity should play a vital

role in determining the outcome of the personal and interpersonal well-being.

Finally, the results of the present study should be interpreted with caution until more data and results are accumulated by the future studies. The main contribution of this study, therefore, seems to be that it investigated the possibility of considering emotional complexity as an individual difference variable, rather than just as a passive experimental manipulation. By highlighting the importance of emotional processing in given situation, which may occur in parallel to cognitive processing, this study contributed to the body of research that emphasizes the interaction between emotion and cognition.

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Appendix A. Emotional Complexity Coding Scheme(ECCS) Adapted from Harter's(1986a) 5 Levels of Emotional Development Sequence

Score	Characteristic	Explanatory Diagram
1	There is no emotional interpretation of the given stimuli nor direct reference to any emotion.	-----
2	One has a single emotion representation concerning a single target at one time only.	<p style="text-align: center;">Emotion(E)1 ↓ Target(T)1 Time 1</p>
3	One has a single emotion representation concerning a single target at different times.	<p style="text-align: center;">E1 E2 ↓ ↓ T1 T1 Time1 Time2</p>
4	One has more than one emotion representation of the same valence toward a single target at any one time.	<p style="text-align: center;">E1(+) E2(+) ↓ ↓ T1 T1 Time1</p> <p style="text-align: center;">E3(-) E4(-) ↓ ↓ T1 T1 Time1</p>
5	One has more than one emotion representation of the same valence each toward a different target at any one time.	<p style="text-align: center;">E1(+) E2(+) ↓ ↓ T1 T2 Time1</p> <p style="text-align: center;">E3(-) E4(-) ↓ ↓ T3 T4 Time1</p>
6	One has more than one emotion representation of the different valence toward different targets at any one time.	<p style="text-align: center;">E1(+) E2(-) ↓ ↓ T1 T2 Time1</p>
7	One has more than one emotion representation of the different valence toward one single target at any one time.	<p style="text-align: center;">E1(+) E2(+) ↓ ↓ T1 T1</p> <p style="text-align: center;">E1(-) E2(-) ↓ ↓ T1 T1</p> <p style="text-align: center;">Various positive and negative aspects of the target</p>

정서복잡성의 개념화와 타당화에 대한 연구

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본 연구는 개인차 변인으로서의 정서복잡성을 개념화하고 또한 타당화하는 데에 목적을 두고 있다. Harter(1986)의 정서 발달의 다섯 단계에 근거한 정서복잡성 채점방식(Emotional Complexity Coding Scheme: ECCS)을 개발, 사람들의 정서적 복잡성을 측정하기 위해 사용하였다. 연구 1에서는 TAT로부터의 네 가지 자극과 KCAT로부터의 두 가지 자극이 정서적 반응을 유발시키기 위한 수단으로 사용되었고, 그들의 정서적 반응들은 본 연구에서 개발된 정서복잡성 채점방식에 따라 두 명의 평정자들에 의해 평정되었다. 인지적 복잡성은 골수의 분배에 관한 설문지를 사용하여 평정되었다. 분석 결과, 정서복잡성 측정치의 높은 평정자간 신뢰도뿐만 아니라, 높은 수준의 내적 합치도가 나타났다. 또한, 정서복잡성 측정치와 인지복잡성 측정치간에 낮은 부적 상관성이 나타났다. 정서적으로 복잡한 사람들은 더 나은 대처 능력을 보이며 명확한 정서를 경험하는 것으로 나타났고, 다른 사람들에 대한 공감능력이 더 뛰어나며, 다른 사람들과 정서적 지지를 더 많이 주고받는다라는 것이 나타났다.

연구 2에서는 정서적으로 복잡한 사람들이 다른 사람들의 정서를 더 잘 이해한다는 가설을 실험실 연구를 통해 입증하였다. 피험자들은 육성이 녹음된 테이프를 듣고, 화자가 그 정서적 상황에서 느꼈던 정서의 종류와 강도를 평가하였다. 분석 결과, 정서적으로 복잡한 사람들은 화자가 경험한 정서들을 더 정확히 파악해 내었다. 또한 그들은 타인이 경험한 정서 강도도 상대적으로 정확하게 인식해 내었다. 특히, 정서적으로 복잡한 사람들은 단순한 사람들보다 타인이 느끼는 정서의 강도를 과대 평가하는 경향이 적었다. 마지막으로, 추후 연구에 대한 제안과 시사점이 논의되었다.

주요어: 정서복잡성, 인지복잡성, 정서 발달, 정서적 정확성, 공감적 이해, 정서-인지 상호작용