# Looking at Lee's Love Theory through Abraham Maslow's Eyes: Factor Analyzing Four Different Models

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John Alan Lee (1974, 1988, 1998)は六つの愛情の類型を発表し、全てのロマンチックな愛情はエロス（肉体的愛情）、ストージ（友情のような愛情）、そしてルーダス（ゲームのような愛情）という三つの根本的愛情の混成から生じると提唱したが、その主張は未だに実証されていない。本研究では既存のデータ(Borrello & Thompson, 1990b)を再び確証的因子分析することにより、四つのモデルの妥当性を検証した。四つのモデルのうちのひとつはAbraham Maslow (1968, 1970)の愛の概念から作成された。検証結果として、Lee の提唱したモデルよりも Maslow の愛の概念から作成されたモデルの方が妥当性において高かった。Lee の愛情理論を Maslow の愛の概念から解釈する可能性が検討された。

Lee (1974, 1988, 1998) theorized that all romantic love styles are derived from three fundamental love styles: eros (physical love), storge (friend-like love), and ludus (game-playing love). However, researchers have not found support for Lee's assumption. In this study, confirmatory factor analyses of an archival data set collected by Borrello and Thompson (1990b) were carried out for testing different structures of love, including a new structure inspired by Maslow's (1968, 1970) conceptualization of love. The results indicated that the model fits statistics of Maslow's love structure, as well as the performance of Lee's original model. The possibility of interpreting Lee's love styles by Maslow's philosophy of love and its alternative fundamental love styles were discussed.

Lee (1974, 1988, 1998) proposed six different types of romantic love. These six types are based on three basic love styles: eros, ludus, and storge. The desire for union with one's partner by physical satisfaction is referred to as eros. An erotic lover knows what kind of physical characteristics attract him or her to his or her beloved. The intention of having a good time together is represented by ludus. A ludic lover tends to change his or her lover frequently and demonstrates less commitment. A reciprocal relationship, one of "give and take", is called storge. A compound of eros and ludus, a possessive love and the need to be loved, is mania. A compound of storge and ludus, a seeking of the best possible partner, is pragma. A pragmatic lover is just like a consumer who seeks the best buy in the free market. Agape, a compound of eros and storge, is described as "selfless, giving, altruistic love" (Lee, 1988, p. 48) for one's partner.

Hendrick and Hendrick (1986) came up with a 42-item Love Attitudes Scale (LAS) which was designed to measure Lee's six different love styles. Hendrick and Hendrick (1986, 1989) factor analyzed the LAS items, and found six different factors that followed Lee's typology. Thompson and Borrello (1987) chose 18 items (3 items for each type of love) from the 42 items on the LAS and factor analyzed the data. They chose these 18 items because they had the highest loadings on the target factors in the two studies of Hendrick and Hendrick (1986). Thompson and Borrello (1987) found a general factor, composed of agape and mania, and four other thematic factors that they interpreted as eros, storge, ludus, and pragma.

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Borrello and Thompson (1990a) factor analyzed the data using 20 items from the LAS. Their results suggested that Lee's six different love styles exist independently from each other. The previously mentioned researchers (i.e., Borrello & Thompson, 1990a; Hendrick & Hendrick, 1986, 1989; Thompson & Borrello, 1987) all utilized similar standard factor analysis procedures (i.e., a "Little Jiffy" procedure by Kaiser).

Borrello and Thompson (1990b) also performed a higher-order factor analysis based on Lee's typology of love. Although three second-order factors emerged, they are mixtures of first-order factors that have no specific patterns and they also suggested that mania and agape could be a general factor. Two years later, Thompson and Borrello (1992) used the LISREL program to perform a confirmatory factor analysis (CFA) of Lee's love styles, and they found that a combination of mania and agape formed a possible factor underlying the six different love styles.

Later, five different models of the structures of love styles were tested by two different research groups in the use of CFA (Thompson, Davenport, & Wilkinson, 1993; Rotzien, Vacha-Haase, Murthy, Davenport, & Thompson, 1994). Their model 1 assumed six uncorrelated factors, while their model 2 assumed six correlated factors. Their model 3 assumed "five factors that are allowed to be correlated, with Mania and Agape (7 + 7 = 14 items) defining a single G-factor" (Rotzien et al., 1994, p. 367). Their models 4 and 5 were both modified versions of their model 2 to improve the model of best fit. However, all five models had an unsatisfactory model fit. For example, these five models' goodness-of-fit indices range from .65 to .83. Murthy, Rotzien, and Vacha-Haase (1996) subsequently performed a second-order factor analysis and found 11 first-order factors and 4 underlying second-order factors when they used the criteria of eigenvalues greater than 1.

Hendrick, Hendrick, and Dicke (1998) made two shorter versions of the original LAS: one consisted of 24 items (4 items for each love style), and the other consisted of 18 items (3 items for each love style). They chose the highest loading items on each factor to construct these short forms of the LAS. A principal components analysis with varimax rotation for three different large samples clearly revealed six different factors which followed Lee's theory.

Additionally, Fiske (1992, 1993) proposed his relational theory that assumes four different kinds of human relationships which can be observed anywhere in human society. These four types are communal sharing, authority ranking, equality matching, and market pricing. A "communal sharing" relationship is like that of family members or kin who share some commonality and in which people are supposed to be altruistic towards each other. An "authority ranking" relationship is similar to the military, where higher-status individuals can have authority and the responsibility to protect the subordinates, and subordinates share a low-level of wealth distribution and are obedient to the superordinate. An "equality matching" relationship is a fair exchange of give-and-take among human beings. A "market pricing" is a cost-benefit calculation of a human relationship. Fiske (1992) hypothesized that relationships develop from communal sharing, authority ranking, equality matching, and then market pricing, according to the cognitive development of individuals. Fiske (1992, 1993) also explained that a human relationship develops in this order historically. In daily life, people combine these four models of relationship strategies. A person does not rely on only one strategy in all relationships (Fiske, Kitayama, Markus, & Nisbett, 1998). Comparing Fiske's relational theory and Lee's love theory, the readers may find three similar conceptualizations between the two: communal sharing & agape, equality matching & storge, and market pricing & pragma. It is reasonable to believe that storge and

pragma need higher cognitive functions than agape. Therefore, when fundamental love styles are considered, agape could be fundamental but storge and pragma may be difficult to become fundamental love styles because they require higher cognitive functions than agape.

Although the effectiveness of the LAS in measuring the six love styles of Lee's love theory is supported by many researchers (Borrello & Thompson, 1990a, 1990b; Hendrick & Hendrick, 1986, 1989, 1990; Hendrick, Hendrick, & Dicke, 1998), some researchers have already questioned the solid existence of six love styles (Murthy, Rotzien, & Vacha-Haase, 1996; Rotzien, Vacha-Haase, Murthy, Davenport, & Thompson, 1994; Thompson, Davenport, & Wilkinson, 1993). Others have already claimed the possible existence of a g-factor that is probably made up of agape and mania (Borrello & Thompson, 1990b; Murthy, Rotzien, & Vacha-Haase, 1996; Thompson & Borrello, 1987, 1992; Thompson, Davenport, & Wilkinson, 1993). Furthermore, no researchers have found support for Lee's claim that ludus, eros, and storge are the fundamental love styles that make up all love styles. In addition, Lee's claim seems to contradict Fiske's theory of human relationships (Fiske, 1992, 1993; Fiske, Kitayama, Markus, & Nisbett, 1998).

Furthermore, Maslow (1968, 1970) classified love in two different ways: D-love and B-love. These two love styles are produced by two different human motivations. The first one is deficiency motivation, which is a need to get something good as a result of an immature personality. The second one is growth motivation, which is the need to give something good as a result of a mature personality. Because the g-factor was mainly loaded by both agape and mania items in previous research (Borrello & Thompson, 1990b; Murthy, Rotzien, & Vacha-Haase, 1996; Thompson & Borrello, 1987, 1992; Thompson, Davenport, & Wilkinson, 1993) and agape can be a prototype of B-love and mania can be a prototype of D-love, a new model (i.e., Model 4) is presented below.

From G-Love, both G-agape and G-mania is produced. Then, agape, pragma, and storge can be produced from G-agape because all three have enough giving aspects (more giving in agape, equal amount of giving in storge, and cost-benefit ratio giving in pragma). Ludus, mania, and eros can be produced from G-mania because all three have enough deficiency aspects (emptiness to be loved in mania, considering having self-fun in ludus, and considering physical aspects more highly than any other aspects in eros). Therefore, hierarchical confirmatory factor analyses were performed in checking the model fit of this structure of love styles.

The present study tested four models: (1) Lee's original model, which simply assumes six different correlated factors, (2) Lee's original and full model, which assumes six different factors and also ludus, eros, and storge as the fundamental love styles, (3) an alternative model which assumes a g-factor and the six different love styles, and (4) an alternative model which is based on Maslow's interpretation of Lee's love styles.

Three hypotheses and a research question were investigated. Hypothesis 1: Model 1 is proposed to have the best model of fit statistics because it assumes the simplest structure among these four models. Hypothesis 2: Model 3 is to have a better model of fit than Model 2 or Model 4 because it assumes a simpler structure than these two models. Hypothesis 3: A g-factor of Model 3 should be highly loaded by agape and mania items as previous researchers have found. Research Question: How does the model of fit perform between Models 2 and 4? Conceptualizations of Model 1 through Model 4 are illustrated in Figures 1 to 4.
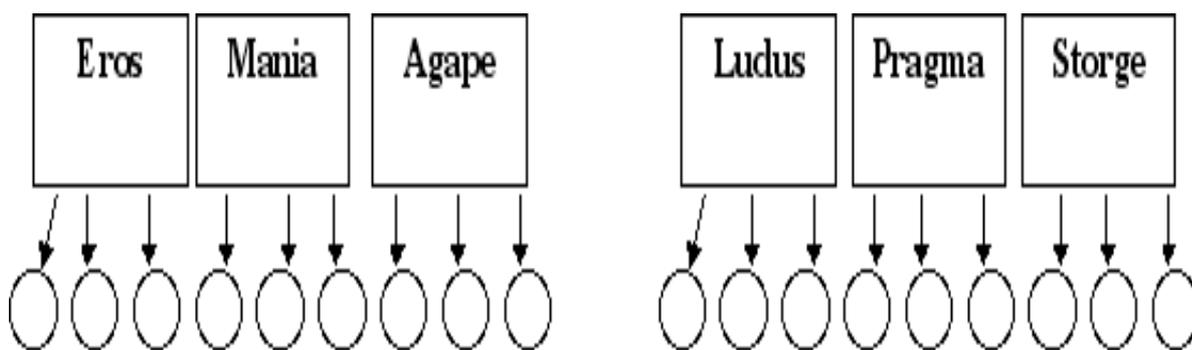
Figure 1. Lee's Original Model Which Simply Assumes Six Different Correlated Factors (Model 1) The circles indicate the variables of each factor. For example, three circles under Eros indicate three variables: EROS2, EROS4, and EROS7.
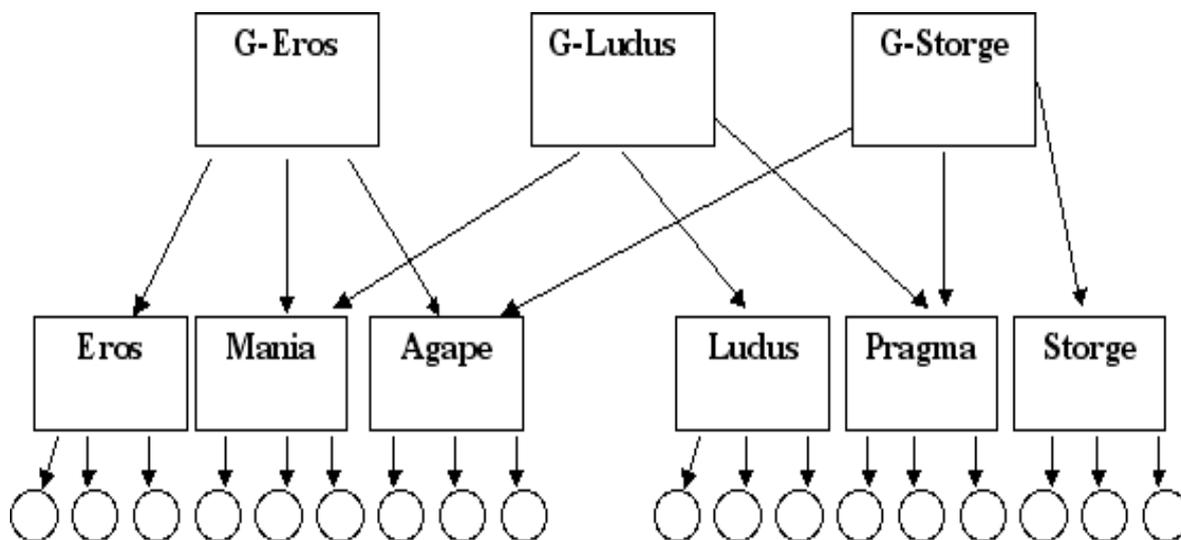


Figure 2. Lee's Original Model Which Assumes Six Different Factors and Ludus, Eros, and Storge as The Fundamental Love Styles (Model 2) The circles indicate the variables of each factor. For example, three circles under Eros indicate three variables: EROS2, EROS4, and EROS7.
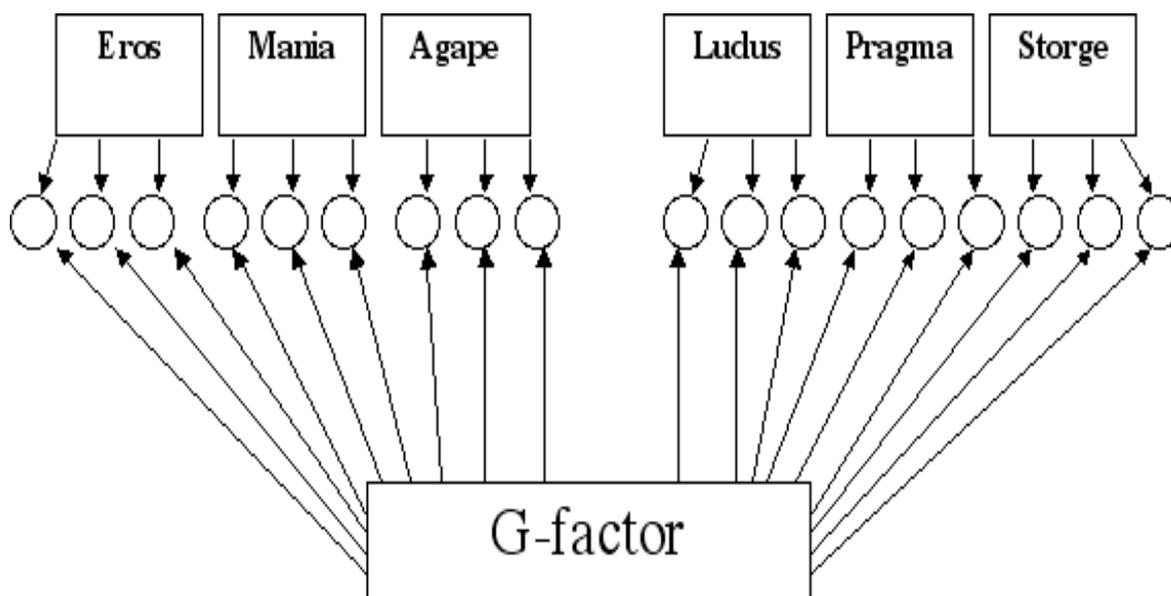


Figure 3. An Alternative Model that Assumes Existence of G-Factor (Model 3) The circles indicate the variables of each factor. For example, three circles under Eros indicate three variables: EROS2, EROS4, and EROS7.
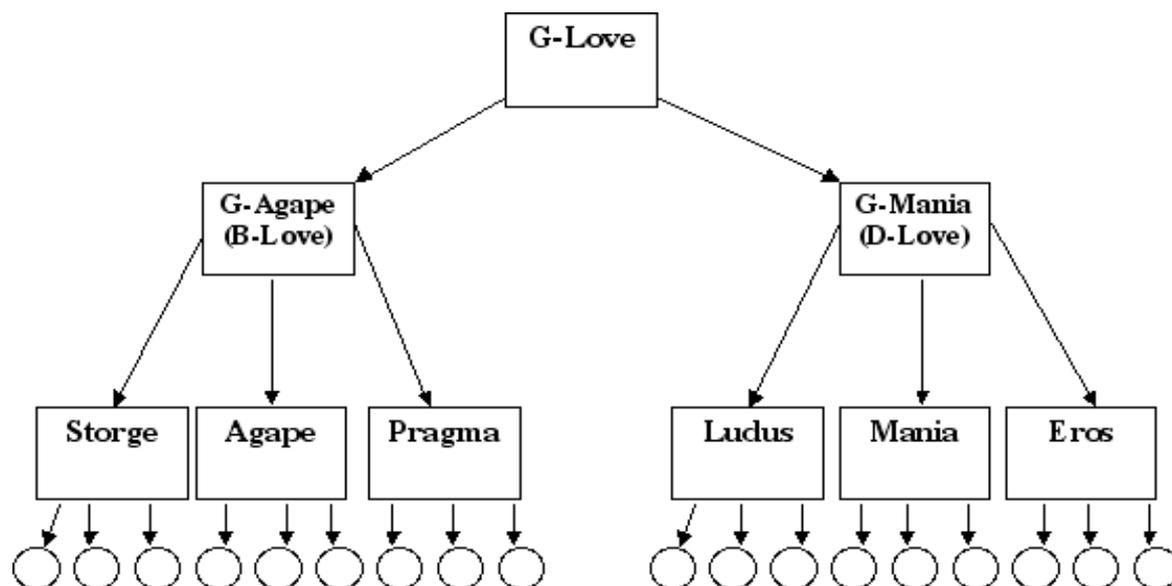
Figure 4. Maslow's View of Lee's Love Styles (Model 4) The circles indicate the variables of each factor. For example, three circles under Eros indicate three variables: EROS2, EROS4, and EROS7.

## Method

### Participants

Due to this study including the use of the archival data set of Borrello and Thompson (1990b), the sample in this study consisted of the same 487 undergraduate and graduate students at the University of New Orleans who participated in the researchers' original study. The mean age was 35.0 years, and 77.2% of the subjects were women. From all of the subjects, a correlation matrix was made and published in Borrello and Thompson (1990b).

### Materials

Hendrick and Hendrick (1986) came up with a 42-item Love Attitudes Scale (LAS) which was designed to measure Lee's six different love styles. Some portion of this scale (i.e., 18 items) was used in the study by Borrello and Thompson (1990b). These 18 items were chosen to measure each love style from Lee's perspective (i.e., 3 items per love style.) These 18 items were identified by Borrello and Thompson (1990b) because they had the highest loadings upon the target love styles in two studies by Hendrick and Hendrick (1986). The manifest variables in this proposed research study are the same 18 items that purported to measure Lee's six different love styles.

### Procedure

For re-analysis of the data, the SAS program 6.12 version for Macintosh was used. CFA were performed for four models: (1) Lee's original model, which simply assumes six different correlated factors, (2) Lee's original and full model, which assumes six different factors and also ludus, eros, and storge as the fundamental love styles, (3) an alternative model which assumes a g-factor and the six different love styles, and (4) an alternative model which is based on Maslow's conceptualization of Lee's love styles.

## Results

The results of model fit indices among these four models indicated that hypothesis 1 was not well supported (see Table 1). Against hypothesis 1, Models 1, 2, and 4 performed equally well, suggesting that Lee's love styles can be well interpreted by Maslow's philosophy of love. In addition, although the model fit performances of Models 1, 2, and 4 were not far from the criteria of the ideal model fit (see Hatcher, 1994, p. 393), Model 3 had a relatively worse statistical fit than the other three models (see Table 1). Therefore, hypothesis 2 was not supported.

Table 1: *Comparisons of Model Fit Statistics among Model 1 and Model 4*

|  | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Fit Criterion | .59 | .61 | **.75** | .49 |
| Goodness of Fit Index (GFI) | .94 | .94 | .92 | **.95** |
| GFI Adjusted for Degrees of Freedom (AGFI) | **.912** | .911 | .880 | .911 |
| Root Mean Square Residual (RMR) | .056 | .059 | .072 | **.055** |
| Parsimonious GFI | .74 | **.75** | .70 | .61 |
| Chi-square | 285.53 | 295.07 | 363.16 | 239.40 |
| Null Model Chi-square | 1899.95 | 1899.95 | 1903.86 | 1903.86 |
| RMSEA Estimate | **.0533** | .0537 | .0657 | .0540 |
| Probability of Close Fit | **.24** | .21 | .00 | .21 |
| Bentler's Comparative Fit Index | .91 | .90 | .86 | **.92** |
| Bentler & Bonett's (1980) Non-normed Index | **.879** | .878 | .816 | .876 |
| Bentler & Bonett's (1980) NFI | .85 | .84 | .81 | **.87** |
| James, Mulaik, & Brett (1982) Parsimonious NFI | .66 | **.68** | .62 | .57 |

*Note.* Bold numbers indicate best performance in each index.

Hypothesis 3 was supported. Hair, Anderson, Tatham, and Black (1998) recommended to retain variables which loaded more than .30 on a target factor when the number of subjects was more than 350 in factor analysis (see Hair, Anderson, Tatham, & Black, 1998, p. 112). Only three mania, three agape, and one eros variables satisfied this criteria. In addition, the eros variable had the lowest loading compared to the other three mania and three agape variables (see Table 2).

Finally, Models 1, 2, and 4 had equally better model of fit statistics than Model 3 in several model fit criteria (see Table 1). In order to find the best fit model among these three, chi-square difference tests were calculated between Models 1 and 2; Models 1 and 4; and Models 2 and 4. A chi-square difference test comparing Models 1 and 4 revealed a significant difference value of 285.53 - 239.40 = 46.13

(*df* = 21, *p* < .005). In addition, a chi-square difference test comparing Models 2 and 4 revealed a significant difference value of 295.07 - 239.40 = 55.67 (*df* = 24, *p* < .001). However, a chi-square difference test comparing Models 1 and 2 was equal to 295.07 - 285.53 = 9.54 which, with 3 *df*, was not significant (*p* > .10). These findings showed that Model 4 has the best model fit among all four models.

Table 2:  *Standardized Factor Loadings from The Result of Factor Analysis of Model 3*

| Variable | G-Factor | Eros | Ludus | Storge | Pragma | Mania | Agape |
|---|---|---|---|---|---|---|---|
| EROS2 | .24 | .59 | .00 | .00 | .00 | .00 | .00 |
| LUDUS8 | -.04 | .00 | .67 | .00 | .00 | .00 | .00 |
| STORGE18 | .11 | .00 | .00 | .96 | .00 | .00 | .00 |
| PRAGMA25 | .25 | .00 | .00 | .00 | .82 | .00 | .00 |
| MANIA33 | **.38** | .00 | .00 | .00 | .00 | .53 | .00 |
| AGAPE38 | **.60** | .00 | .00 | .00 | .00 | .00 | .80 |
| PRAGMA27 | .11 | .00 | .00 | .00 | .41 | .00 | .00 |
| EROS4 | **.31** | .71 | .00 | .00 | .00 | .00 | .00 |
| STORGE21 | .19 | .00 | .00 | .56 | .00 | .00 | .00 |
| AGAPE39 | **.71** | .00 | .00 | .00 | .00 | .00 | .09 |
| MANIA32 | **.53** | .00 | .00 | .00 | .00 | .46 | .00 |
| LUDUS14 | .05 | .00 | .63 | .00 | .00 | .00 | .00 |
| AGAPE42 | **.68** | .00 | .00 | .00 | .00 | .00 | .11 |
| MANIA31 | **.39** | .00 | .00 | .00 | .00 | .55 | .00 |
| PRAGMA26 | .27 | .00 | .00 | .00 | .29 | .00 | .00 |
| STORGE20 | -.01 | .00 | .00 | .33 | .00 | .00 | .00 |
| LUDUS9 | -.02 | .00 | .41 | .00 | .00 | .00 | .00 |
| EROS7 | .24 | .43 | .00 | .00 | .00 | .00 | .00 |

*Note. "EROS2" indicates that it is an item which is designed to measure eros love style and it appeared as a second item in the Love Attitudes Scale by Hendrick and Hendrick (1986). Bold numbers indicate high loading variables on a g-factor.*

## Discussion

Although the results suggested that it is possible to interpret Lee's love styles in terms of Maslow's philosophy of love, the limitations of this research should be mentioned. First, the sample lacked diversity. Among the students who participated in this study, approximately three-quarters were American women whose native language was English. Accordingly, one should exercise caution in generalizing these results to a population outside that of American women. Previous cross-cultural research based on Lee's love theory have already reported interesting

national differences among six different love styles (Goodwin & Findley, 1997; Sprecher, Aron, Hatfield, Cortese, Potapova, & Levitskaya, 1994). Future research would do well to include subjects from varying ethnic groups or international individuals, and/or non-English speakers.

The second problem is that the author has only the correlation matrix and does not have an original data set. The possibility of non-normality distribution or missing data in the original data set could not be checked.

Third, the author used the Heywood option for the CFA of Models 3 and 4. The Heywood option in the SAS is an artificial restriction that sets communality estimates never become negative throughout the calculation of the CFA. Therefore, the usage of the Heywood option could be the weakest point of this study. However, the author judged that proposing the possibility of combining Lee and Maslow's love theories is more beneficial to the progress in academia than the Heywood option usage.

Since the author would like to propose the possibility of interpreting Lee's love styles through Maslow's philosophy of love, the alternative fundamental love styles will be discussed. The alternative fundamental love styles (i.e., mania or D-Love, and agape or B-Love) can be explained from two fundamental human activities: give and take. Mania or D-Love can be interpreted as the mirror of a capitalist system. Each partner in a romance tries to monopolize his or her partner because s/he is following a capitalist ideology. In capitalism, "having" is the most important human activity (Fromm, 1956). Also Christianity teaches that agape or B-Love is the most desirable for humans. Since subjects in this re-analysis were Americans who grew up within a Judeo-Christian and capitalistic society, it is indeed possible that the fundamental existence of agape and mania might be influenced by the power of the sociocultural system. Both John Alan Lee and Robert J. Sternberg, two contemporary love theorists, supported a social, constructive nature of love. Sternberg has clearly claimed that love is one of the social and cultural products of human beings (Beall & Sternberg, 1995). Lee (1988) wrote, "our civilization has been a battleground for ideologies of love" (p. 42). Lee (1998) also submitted that the conceptualization of love is based on an ideology that is enforced or forbidden by society.

However, both agape and mania also have roots in biology. Humans tend to engage in positive behavior toward their partners without thinking about what they may get in return. This phenomenon may be due to their altruistic nature (Hunt, 1990; Kohn, 1990) and also to gain something for their own survival. Human motivation is not always pure. This study may simply suggest that when American women tried to engage in love in a romantic setting in the late 20th century, they might have been fundamentally motivated by mania and agape, products from both nature and nurture. Although this study had a few shortcomings in both data and samples, it indicated some possibility to combine Lee's and Maslow's philosophies of love.

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