Compassionate Love Scale: Validity and Reliability Study

Sevgi Algısı Ölçeği: Geçerlik ve Güvenirlik Çalışması

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Abstract: In this research, it is aimed to develop a valid and reliable scale that measures the compassionate love perceptions of individuals. After exploratory factor analysis, a scale consisting of 26 items was formed under six factors. It was found that these 26 items explained 63.958% of the total variance. The factors' names are: 1) Compassionate Love and its Function, 2) Compassionate Love and Behaviors, 3) Compassionate Love and Values, 4) Compassionate Love and Its Source, 5) Compassionate Love and Personal Traits, and 6) Compassionate Love and Differences. As a result of the confirmatory factor analysis, it was determined that the X2/df value was 2.53, the RMSEA value was 0.067, the NFI value was 0.93, the CFI value was 0.95, the GFI value was 0.86, and the AGFI value was 0.83. In the reliability study, the Cronbach's Alpha value of the whole scale was found to be 0.88. In the test-retest reliability, the correlation value between the two tests was found to be 0.78. When all the results of the validity and reliability studies of the scale are examined, it is thought that the scale is a valid and reliable measurement tool that can measure the compassionate love perceptions of individuals.

Keywords: Compassionate love, confirmatory factor analysis, exploratory factor analysis, perception of love scale, validity and reliability

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Öz: Bu araştırmanın amacı bireylerin sevgi algılarını ölçen geçerli ve güvenilir bir ölçek geliştirmektir. Başlangıçta 42 maddeden oluşan taslak ölçeğe açımlayıcı faktör analizi yapılmış ve altı faktör altında 26 maddeden oluşan bir ölçek oluşmuştur. Bu 26 maddenin toplam varyansın %63.958'ini açıkladığı görülmüştür. Altı faktörlü yapıda yer alan faktörler isimlerinin: 1) Sevgi ve İşlevi, 2) Sevgi ve Davranışlar, 3) Sevgi ve Değerler, 4) Sevgi ve Kaynağı, 5) Sevgi ve Kişisel Özellikler ile 6) Sevgi ve Farklılıklar olarak isimlendirilmesinin uygun olduğuna karar verilmiştir. Ölçeğin faktör yapısının doğrulanması amacıyla yapılan DFA sonucu, X2/df değerinin 2.53, RMSEA değerinin 0.067, NFI değerinin 0.93, CFI değerinin 0.95, GFI değerinin 0.86 ve AGFI değerinin 0.83 olduğu belirlenmiş ve elde edilen bu değerlerin yapının doğrulanması için yeterli olduğu görülmüştür. Güvenirlik çalışmasında ölçeğin tümüne ait Cronbach's Alpha değeri 0.88 olarak bulunmuş, madde toplam korelasyon değerleri incelendiğinde 0.2'nin altında herhangi bir madde yer almadığı görülmüştür. Test tekrar test güvenirliğinde ise iki test arası korelasyon değeri 0.78 olarak bulunmuştur. Ölçeğin geçerlik ve güvenirlik sonuçları incelendiğinde ölçeğin bireylerin sevgi algılarını ölçebilecek geçerli ve güvenilir bir ölçme aracı olduğu düşünülmektedir.

Anahtar Kelimeler: Açımlayıcı Faktör Analizi, Doğrulayıcı Faktör Analizi, Geçerlik Ve Güvenirlik, Sevgi, Sevgi Algısı Ölçeği

Introduction

With each passing day, deterioration occurs in society, family, marriages, and friendships in terms of communication, empathy, and compassionate love, it is seen that there are blockages in relations at some points, and people have problems about how to find solutions to these problems (Ladner, 2003). Since it is thought that compassionate love creates harmony between people and eliminates feelings such as hatred, anger, and disharmony (Gasset, 1995), it can be said that the existence of individuals with the value of compassionate love will allow peace and happiness to prevail and will reduce the deterioration in the society.

Love Concept

Sprecher and Fehr (2005) define the concept of love as an attitude that includes emotions, cognitions, and behaviors such as caring, being sensitive, supporting, helping, and understanding towards all people, especially when they need it; Fromm (2011) defines it as our active interest in the survival and development of what we love. According to Jampolsky (1995), love asks no questions. Its natural state is not measured and comparison, but growth and expansion. Love is freedom from fear.

According to Fromm (2011), love is an activity, not a passive feeling. The active feature of love, on the other hand, requires primarily giving, not receiving. Post (2010) thinks that without love, people cannot escape from poverty no matter what they do, and when they focus on unconditional/compassionate and unlimited love, they can discover the deep and happy self that lies within them and live in dignity and happiness.

Lee (1977) and Hendrick and Hendrick (1986) state that there are six types of love and list these types of love as romantic love, manic love, egoistic love, pragmatic love, companionate love, and altruistic love. Types of love other than altruistic love change and decrease according to the situation of the other party. But altruistic love is the love for others despite their faults and caring more about their well-being than our own. When love is experienced as a possession, it involves keeping the loved one in check. According to Fromm (2011), many people use the word love to cover their lack of love.

It is stated that intimacy, personal characteristics (Freedman, Sears & Carlsmith, 1981), familiarity (Penrod, 1982), rewarding, similarity (Dönmez, 1998), and cognitive balance (Özen & Gülaçtı, 2010) are the determinants of love, and according to these situations, the person's love is determined and can change. However, the compassionate love that this study focuses on is not based on mutual reactions, has no personal profit, motives, is non-negotiable, and does not care who reciprocates the love. This unselfish and limitless love is the main purpose of our life, the source of life's meaning and dignity, the foundation of our self-esteem. Compassionate love requires leaving aside all secondary factors such as one's well-being, self-esteem, and happiness, and wanting the well-being of the loved one first (Post, 2003). Compassionate and unprejudiced love is a kind of altruistic, unconditional, open, and sensitive love that prioritizes the well-being of others, occurs with the free will of the person without any obligation, and includes understanding people without prejudice and accepting them as they are (Maniaci & Rogge, 2014).

Underwood (2009: 7-8, 14-15) states that compassionate love has two basic features. The first is appropriate motivation, which centers on the well-being of others, and the other one is the ability to discern what will increase people's well-being. For this reason, compassionate love is highly associated with prosocial behaviors that include providing support to other people (Sprecher & Fehr, 2005). When we look at the characteristics of this compassionate love, it is seen that these are characteristics such as altruism, benevolence, caring, interest, empathy, sympathy, and sensitivity (Fehr & Sprecher, 2009). These personality traits associated with compassionate love are defined as the willingness to be altruistic, empathy, moral reasoning, intelligibility, and the ability to understand other people's perspectives. Each of these personality traits supports the development of compassionate love (Dovidio & Penner, 2001).

Aim of Study

Academics working on love state that it is quite unclear what feelings and experiences the word "love" is used by people who use this word (Reis, Maniaci & Rogge, 2014). In the literature, there are studies investigating the love perceptions of students (Castillo, 2016; Şahin, Ökmen & Kılıç, 2019; Şahin & Kılıç 2020b; Şahin & Kılıç, 2021; Tozduman Yaralı, Özkan & Güngör Aytar, 2016) and administrators (Şahin & Kılıç, 2020a). However, these studies are few in number and these studies were conducted using qualitative data collection

tools; In Castillo's (2016) study, it was seen that the attitude scale towards love was used. When the scale development studies on love in the literature were examined, it was seen that "the Compassionate Love" scale was developed by Sprencer and Fehr (2005), "the Triangular Love" scale was developed by Sternberg (1997), "the Romantic Love" scale was developed by Rubin (1970), and "the Passionate Love" scale was developed by Hatfield and Sprencer (1998). In these scales, it is seen that love is limited and a part of love is measured. These scales do not aim to measure a general perception of love. The state of having the value of compassionate love and how compassionate love is perceived is directly related to each other. Because perception is the organization, definition, and interpretation of sensory information to understand the presented information or the environment (Schacter, 2011). For this reason, it is thought that developing a compassionate love perception scale is meaningful and important to determine how individuals perceive the value of compassionate love and how they interpret compassionate love.

In this context, this research aims to develop a compassionate love perception scale to determine how individuals interpret compassionate love, the degree of their perception of compassionate love changes according to any situation, and whether there is a perception of compassionate love in their lives.

Method

Item Writing

Before the development of this scale, another application was carried out in which 1) item writing, 2) expert opinion, 3) pilot implementation, and 4) exploratory factor analysis (EFA) steps were performed but without a successful result. At the stage of article writing, first of all, the research literature in Turkey and abroad was examined. Later, within the scope of the study conducted by Şahin (2020), the views of students, teachers, and principals' perceptions of compassionate love were also examined, and 102 items, 47 positive and 55 negatives, were written under six dimensions. Using the Lawshe (1975) technique, some items were removed from the scale after the opinions of 16 experts, and some adjustments were made. A pilot study was conducted on 39 undergraduate students with the remaining 77 items. After the analyses, one item was removed from the form and a trial application was carried out on a sample of 122 people with 76 items. A healthy factor structure could not be reached after EFA. It has

been experienced that the high number of items, negative items, unclear and long item statements prevent factorization.

In this case, it was returned to the stage of item writing, and then all the steps of scale development were performed again. Considering the problems experienced in the first application, it was decided to reduce the number of items and not to write negative items. A total of 45 items were written under five dimensions, all positive. In the item pool, there were 8 items in the dimension of the "existence/source of love", 9 items in the dimension of the "function of love", 10 items in the dimension of "how to be loved", 11 items in the dimension of "who should be loved", and 7 items in the dimension of" love-value relationship". In determining the number of items, the inclusion of the features in the dimensions was taken into account.

Working Group

The sample of expert opinion consisted of 13 experts, one female, and 12 male. Five of the experts are professors, three of them are Associate professors, three of them are assistant professors, one of them is a lecturer, and one of them is a teacher who has a Ph.D. degree.

The pilot application was carried out with graduate students. Nemoto and Beglar (2014) state that the pilot sample should be at least 30 people. In this context, the sample of the pilot application consisted of 49 students, 22 females and 27 males, who received postgraduate education in the departments of Curriculum and Instruction (CI) and Educational Administration and Supervision (EAS). 7 of them are CI and 42 of them are EAS students.

The sample of EFA consisted of 246 students in total, undergraduate students studying in Duzce University Education Faculty Psychological Counseling and Guidance (PCG), Turkish Language Teaching and Mathematics Teaching departments, and postgraduate students in CI and EAS departments. 172 of the students are females and 74 of them are males. 199 of the students are undergraduate and 49 are graduate students. Of the undergraduate students, 85 are PCG students, 52 are Turkish Language Teaching and 60 are Mathematics Teaching students. 14 of the students are in the 1st grade, 180 of them are in the 2nd grade and 3 of them are in the 3rd grade. 7 of the graduate students are CI and 42 of them are EAS students. For EFA, MacCallum, Widaman, Zhang, and Hong (1999) state that the sample size of 100-200 people and Hinkin (1995)

states that 150 people is sufficient to obtain accurate results. In this context, it can be said that the selected sample is sufficient and appropriate.

CFA was conducted in a completely different sample from the EFA sample. The sample consisted of 337 students in total, 253 of the students are females and 84 of them are males. Of the undergraduate students, 32 are PCG students, 56 are Turkish Language Teaching, 45 are English Language Teaching, 24 are Science Teaching, 77are Pre-school Teaching, 74 are Classroom Teaching, and 29 are Mathematics Teaching students. 162 of the students are in the 1st grade, 9 of them are in the 2nd grade and 166 of them are in the 3rd grade. For CFA, Carpenter (2018) states that a sample size of at least 300 people is sufficient to obtain accurate results. In this case, it can be said that the sample of 337 people is sufficient.

Item-total correlation and Cronbach Alpha reliability calculations were performed with the data collected on the CFA sample. The test-retest sample consisted of 51 undergraduate students studying in Duzce University Education Faculty PCG (This sample was included in the EFA sample of the scale, but not in the CFA sample). 36 of the students are girls and 15 are boys. 49 of the students are 2nd-grade students and 2 of them are 3rd-grade students.

Data Collection

"The Expert Opinion Form" was prepared by the researchers via the Lawshe (1975) technique. They were asked to evaluate the items in the form according to questions: 1) Is it clearly expressed?, 2) Does it represent the feature to be measured? and 3) Can it be placed under the specified category? and were asked to mark one of the "appropriate", "must be corrected" or "must be removed" options in the columns next to the items. In addition, it was stated that they could write their opinions about the items in the "explanations" section and if there were any items they wanted to add for each field, they could add them to the end of the form. Expert opinion forms were collected by e-mail between 06/02/2021 and 08/03/2021.

After the expert opinion, three items were removed from the form and thus 42 items were included in the pilot application form. The items were reordered based on randomness and placed in the form. The pilot application form was prepared in a 5-point Likert-type rating scale format. The items of the scale were arranged as "strongly disagree", "disagree", "undecided", "agree", and

"strongly agree". The instruction included information such as what the purpose of the scale is, what the data is used for, how the scale should be answered, and the approximate response time. Pilot application data were collected through Google Form between 31/03/2021 and 07/04/2021, and the data collection was done in accordance with the principle of voluntariness. The data were transferred from Google Form to the Excel program and then to the SPSS program.

After the analysis made after the pilot application, no change was needed in any item, and the pilot application with a 42-item form was used for EFA in the same way. EFA data were collected between 07/04/2021 and 09/04/2021 via Google Form. Through the collection of data, the principle of voluntariness was applied. The data were transferred from Google Form to the Excel program and then to the SPSS program.

The CFA form was created with the remaining 26 items as a result of EFA. The items were reordered based on randomness and placed in the form. The pilot application form was prepared in a 5-point Likert-type rating scale format. The items of the scale were arranged as "strongly disagree", "disagree", "undecided", "agree", and "strongly agree". The instruction included information such as what the purpose of the scale is, what to do with the data, how the scale should be answered, and the approximate response time. CFA data were collected between 21/04/2021 and 01/05/2021 via Google Form. In the collection of data, the principle of voluntariness was applied. The data were transferred from Google Form to the Excel program and then to the SPSS program.

The form used in the CFA was also used for test-retest reliability. In the test-retest, the first test data was collected on 05/05/2021, and the second test data was collected via Google Form on 22/05/2021. In the collection of data, the principle of voluntariness was applied. The data were transferred from Google Form to the Excel program and then to the SPSS program.

Data Analysis

Expert Opinion data were analyzed using the Lawshe technique. The Content Validity Rate (CVR) of each item and then the Content Validity Index (CVI) of the whole form were calculated by taking one less of the ratio of the total number of experts who marked the "appropriate" option for each item to half of the total number of experts.

The normality of the pilot application data was examined with the Kolmog-

orov-Smirnov test, and the Cronbach Alpha coefficient was calculated to determine the internal consistency. Then, item-total correlations were examined.

EFA, which was conducted to determine the construct validity of the scale, was carried out using SPSS. First of all, preliminary analysis processes were carried out, and then the analyzes were started. Principal component analysis was used as a factor extraction technique. The purpose of the principal component analysis is to reduce the size of the dataset while preserving as many variables as possible (Jolliffe & Cadima, 2016). The "varimax" technique, one of the vertical rotation techniques, was chosen as the rotation technique. The purpose of the rotation is to achieve a structure that tries to ensure the maximum loading of each variable but collects a load of each variable on as few factors as possible (Yong & Pearce, 2013). The factor load value was chosen as a minimum of 0.40. EFA was performed without limiting the number of factors.

To test the compatibility of the structure that emerged with the EFA, firstly, preliminary analysis processes were carried out and then CFA was started. LISREL program was used in the analysis and "Maximum Likelihood" was chosen as the estimation method. First of all, the significance level of t values, then error variances and factor loading values were examined. In the next step, the fit indices in the output file of the model were evaluated.

For test-retest reliability, first of all, the normality of both data sets was examined with the Kolmogorov-Smirnov test, and Pearson Product Moments correlation analysis was performed.

Results

Validity Results

Content Validity

Expert opinion was taken to ensure content validity. Expert Opinion data were analyzed using the Lawshe technique. The CVR values obtained as a result of the content validity calculations are given in Table 1:

Table 1: Content Validity Calculations

Item	CVR	Item	CVR	Item	CVR	Item	CVR
M1	0,538	M13	0,846	M25	0,692	M37	0,692
M2	0,231*	M14	1,000	M26	0,231*	M38	0,692
M3	0,692	M15	1,000	M27	0,385*	M39	1,000
M4	0,538	M16	0,692	M28	0,846	M40	1,000
M5	0,538	M17	0,846	M29	0,692	M41	0,692
M6	0,538	M18	0,538	M30	0,538	M42	0,846
M7	0,692	M19	0,385*	M31	0,538	M43	0,846
M8	0,692	M20	0,385*	M32	0,538	M44	0,538
M9	0,846	M21	0,692	M33	0,385*	M45	0,692
M10	0,692	M22	0,846	M34	0,538		
M11	1,000	M23	0,692	M35	0,692		
M12	1,000	M24	0,846	M36	0,692		

In this technique, if the CVR value, which was created based on the opinions of 13 experts, is less than 0.538, it is decided to discard the item (Veneziano & Hooper, 1997). Therefore, three items less than 0.538 (M2, M19, M20) in Table 1 were excluded from the measurement tool. The other three items (M26, M27, M33) smaller than 0.538 were deemed appropriate by the researchers to remain on the scale. As such, the measurement tool consisted of 42 items.

Then, the CVI value was calculated by taking the average of the CVR values of the remaining items in the scale, and it was found to be 0.703. The fact that the obtained CVI value is greater than the CVR value (0.703>0.538) indicates that the content validity of the remaining items in the scale is statistically significant.

As a result of the content validity study, the items whose opinion was stated that they should be corrected by at least one expert were examined one by one by the researchers and some corrections were made.

Face Validity

Pilot applications were made for the face validity of the scale. After the analysis, no change was needed in any item.

Construct Validity

EFA and CFA were performed to ensure construct validity.

EFA

After the pre-analysis procedures before starting the EFA, it was observed that there were no missing data in the forms. Two forms, all marked as 1 and all marked as 5, were excluded from the analysis. Z scores were examined to determine whether extreme values were included in the data set. Univariate outliers can be determined by looking at Z-scores. If the Z score of any observation is ±3.0 or more, the observation is an extreme value (Kline, 2016). It was observed that the scores on the scale ranged from 1.99 to 2.82, and no extreme values were found. Since there is no negative (reverse) item on the scale, reverse scoring was not done. The normality of the scale was examined with the Kolmogorov-Smirnov test, since df(246), p=0.20, it was seen that the data set was normally distributed. The internal consistency of the scale was checked and the Cronbach's Alpha value was found to be 0.928. It is seen that this value indicates high reliability. Item-total correlations were examined and it was seen that there was no item below 0.2. The anti-image correlation matrix was examined and it was found that there was no item below 0.50. With Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) test, it was checked whether factor analysis could be applied to the data and its factorability. In the Barlett test, X2= 5325.228, p=0.00, and the correlations between the items were found to be statistically significantly different from zero. The KMO value was determined to be 0.898. Before moving on to factor analysis, a KMO value of 0.60 or higher is considered acceptable (Carpenter, 2018).

After the preliminary analysis, the EFA stage was started. 16 items (M42, M37, M7, M2, M41, M10, M28, M16, M38, M22, M30, M35, M26, M19, M4, M34) with factor loadings below 0.40, loaded under two or more factors as a result of EFA, were removed from the scale one by one. As a result of the analysis, 26 items remained under a total of 6 factors. It was observed that these 26 items explained 63.958% of the total variance. The factors and item factor loads of the scale are given in Table 2:

Table 2: Item Factor Loads

Item No	1. Factor	2. Factor	3. Factor	4. Factor	5. Factor	6. Factor
M11	.800					
M12	.751					
M20	.702					
M33	.663					
M18	.575					
M13	.491					
M23		.811				
M39		.751				
M17		.749				
M36		.747				
M21		.592				
M15		.550				
M32			.782			
M29			.779			
M24			.708			
M31			.703			
M27			.569			
M6				.849		
M25				.796		
M14				.731		
M3					.756	
M8					.751	
M5					.691	
M40						.862
M9						.733
M1						.494

As seen in Table 2, the factor loadings of the items are between 0.862 and 0.491, and there is no item loaded below 0.40. Tabachnick and Fidell (2012) state that the minimum factor load should be 0.32. Accordingly, it can be said that the minimum factor load of 0.491 obtained in this study is quite good.

After the factors were determined, the variables that loaded the factors were examined, the common points between the variables were determined and the factors were named. Factor names and the items included in the factors are given in Table 3:

Table 3: Names of Factors and Items in Factors

Factors	Items
1. Factor Compassionate Love and Function	Compassionate love prevents violence Compassionate love strengthens society Compassionate love brings togetherness Compassionate love reduces evil Compassionate love matures people Compassionate love brings happiness
2. Factor Compassionate Love and Behaviors	Those who do not value us should also be loved Those who harm us should also be loved Those who do not understand us should also be loved Those who do not sacrifice for us should also be loved It is necessary to love people without looking at their faults We should love without expecting them to reciprocate our loves
3. Factor Compassionate Love and Values	Having the value of sacrifice is possible with love There is no value in intolerance without love The value of trust can only be formed with love The value of brotherhood cannot be established without love Love is the source of all positive values
4. Factor Compassionate Love and its Source	Love is a feeling that comes from God Love brings you closer to God Love is an emotion that is the source of creation
5. Factor Compassionate Love and Personal Traits	It is necessary to love people regardless of their status It is necessary to love people regardless of their physical characteristics You have to love people without judgment
6. Factor Compassionate Love and Differences	People of different races should also be loved Those who have different ideas should also be loved Those of different faiths should also be loved

When Table 3 is examined, it is seen that the names of the factors are 1) Compassionate Love and Its Function, 2) Compassionate Love and Behaviors, 3) Compassionate Love and Values, 4) Compassionate Love and Its Source, 5) Compassionate Love and Personal Traits, and 6) Compassionate Love and Differences. There are six items in the first and second factors, five items in the third factor, and three items each in the four, five, and sixth factors.

"The Compassionate Love" scale developed by Sprencer and Fehr (2005) consists of "love for close others" and "love for strangers and humanity" di-

mensions; "The Triangular Love" scale developed by Sternberg (1997) consists of "intimacy", "passion", and "decision/commitment" dimensions; "The Romantic Love" scale developed by Rubin (1970) consists of "affiliative and dependent need", "a predisposition to help", and "an orientation of exclusiveness and absorption" dimensions; "The Passionate Love" scale developed by Hatfield and Spencer (1998) consists of "cognitive", "effective" and "behavioral" dimensions. When the scales are examined, it is seen that they do not have dimensions on the function of love, the source of love, the relationship of love with values, and who should be loved. It can be said that this scale developed in this sense will fill this deficiency in the literature.

CFA

First of all, CFA was performed on the exploratory factor analysis data for a preliminary analysis. It was determined that X2/df value was 2.22, the RMSEA value was 0.071, the NFI value was 0.92, the CFI value was 0.95, the GFI value was 0.83, and the AGFI value was 0.80. When the values were examined, it was seen that the obtained indices indicated a good fit and it was decided to try the CFA on a new sample.
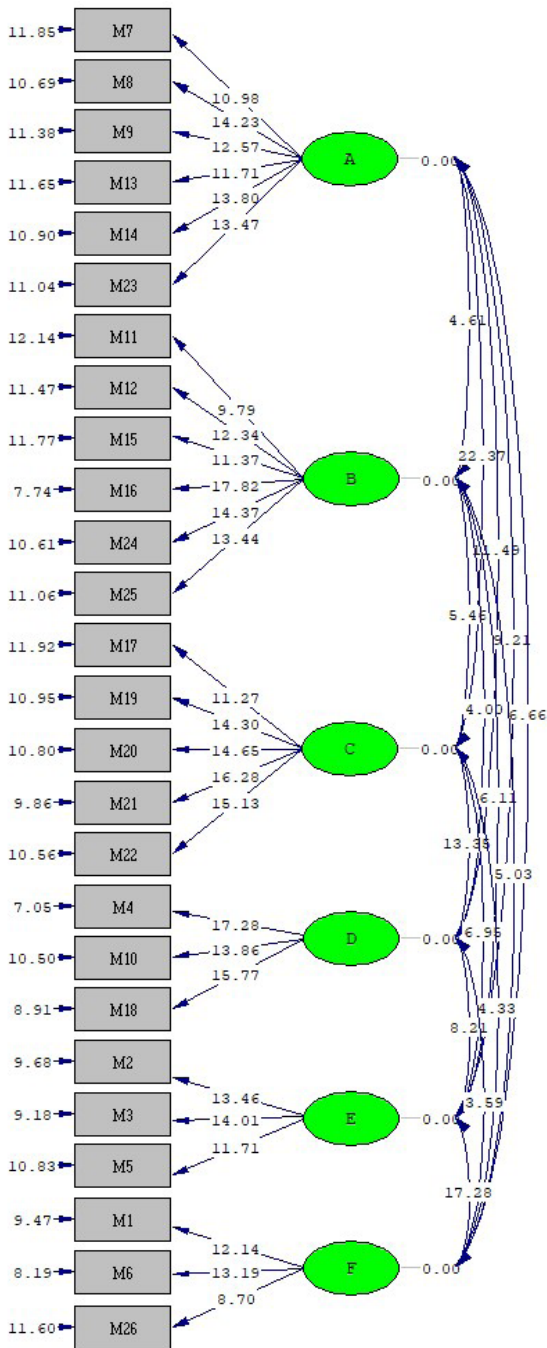
After the preliminary analysis was performed before starting the analysis with the data obtained in the new sample, it was found that there were no missing data in the forms. One form, all marked as 5, was excluded from the analysis. Z scores were examined to determine whether extreme values were included in the data set. It was observed that Z scores in the scale ranged from 1.88 to -3.48, and two extreme values (-3.48 and -3.39) were excluded from the form. The normality of the scale was examined with the Kolmogorov-Smirnov test, and since df(337), p=0.00, it was seen that the data set was not normally distributed. The kurtosis value of the data was examined, it was seen that the value was -.341 and it was determined that the data set deviated slightly from normality.

After the preliminary analysis, CFA was conducted to test the suitability of the factor structure of the scale, which was determined to consist of six factors as a result of EFA. The Maximum-Likelihood method, one of the estimation methods, was used. It is considered appropriate to use this estimation method when the variables deviate slightly or moderately from normality (Harrington, 2009; Li, 2015; Mîndrilă, 2010).

At this stage, road diagrams obtained as a result of CFA were examined. The

path diagram with the t-values of the items is given in Figure 1. When Figure 1 is examined, it is seen that all t values are above 2.56 and are significant at the 0.01 level.
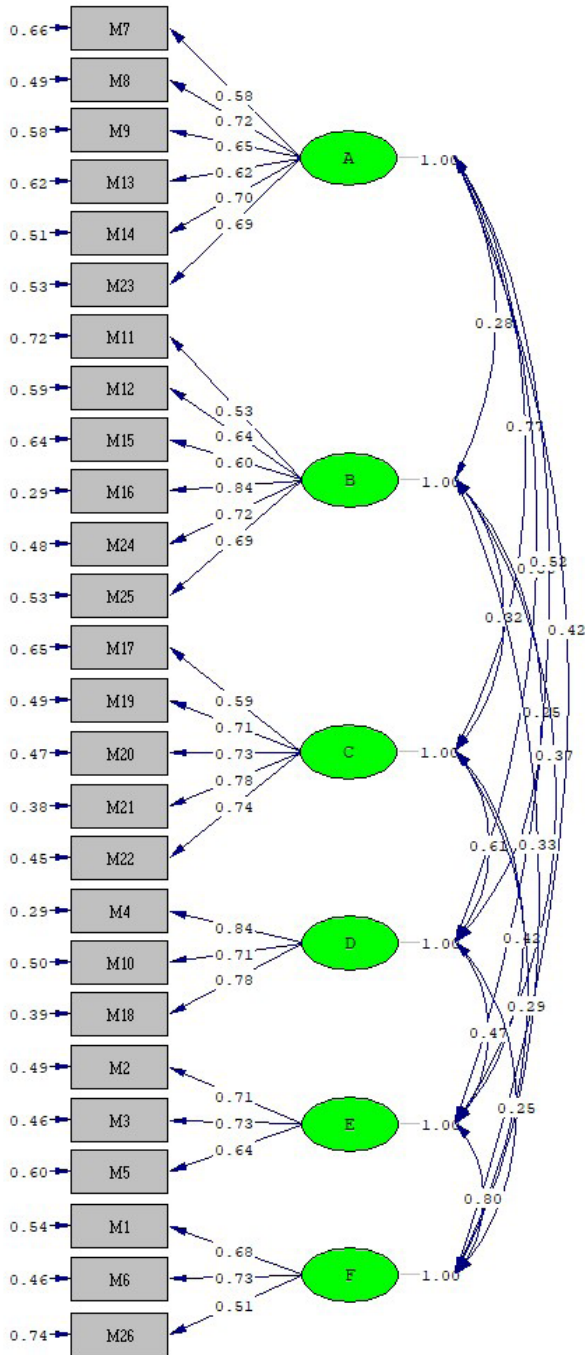
The path diagram including the factor load values and error variances of the items is given in Figure 2. When Figure 2 is examined, it is seen that there is no item with a factor load lower than 0.3, and the lowest value is 0.51.

Chi-Square=717.38, df=284, P-value=0.00000, RMSEA=0.067

Figure 1. Path Diagram (t values)

Chi-Square=717.38, df=284, P-value=0.00000, RMSEA=0.067

Figure 2. Path Diagram (standardized solution)

In the next step, the fit index values in the output file of the model were examined. Values are listed in Table 4:

Table 4: Fit Index Values of the Model

Fit Indexes	Values	Fit Indexes	Values
X^2	717,38	NFI	0.93
df	284	NNFI	0.95
X^2/sd	2,53	CFI	0.95
p-Value	0,001	GFI	0.86
RMSEA	0,067	AGFI	0.83

Table 4 shows that the p-value is 0.000. The model's insignificant results at p<0.005 indicate that it is a suitable model (Matsunaga, 2010). X2/df is 2.53 and this value being below 3 corresponds to a good fit (Kline, 2016). It is seen that the RMSEA value is 0.067. A value between 0.05 and 0.08 is an indication of adequate fit (Hoyle, 2004). It is seen that the NFI, NNFI, and CFI values are all above 0.90 and these values indicate a good fit (Hoyle, 2004). It was observed that the GFI value was 0.86 and the AGFI value was 0.83. There are opinions that indicate that it is sufficient for the GFI and AGFI values to have a minimum value of 0.80 (Doll, Xia & Torkzadeh 1994; Segars & Grover 1993).

During the data collection process, CFA analysis was carried out at various stages and various fit index results were obtained for different sample sizes in Table 5:

Table 5: Fit Index Values at Various Sample Sizes

	Sample Size				
	122 People	161 People	264 People	304 People	337 People
NFI	89	90	91	92	93
CFI	96	95	95	95	95
GFI	80	81	83	85	86
AGFI	75	77	79	82	83

In Table 5, it is seen that the index that is least affected by the sample size is CFI. It is seen that the NFI value increases as the sample grows, but the GFI and AGFI values are more affected by the sample size. In this case, it is thought that these values will exceed 0.90 if more sample sizes are reached.

When all the values obtained as a result of CFA are examined, it can be said that all indices indicate good fit, and the six-factor structure of the scale consisting of 26 items was confirmed as a model.

Reliability Results

For reliability; item-total correlation, Cronbach Alpha reliability, and test-retest reliability calculations were made.

Item Total Correlation

Item-total correlation values are given in Table 6:

Table 6: Item Total Correlation Values

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
M1	102.40	124.056	.264	.883
M2	102.38	121.843	.381	.881
M3	102.64	118.386	.481	.879
M4	102.89	115.881	.465	.879
M5	102.41	121.213	.442	.880
M6	102.60	120.460	.426	.880
M7	102.86	118.559	.406	.881
M8	102.41	121.796	.451	.880
M9	102.48	121.238	.450	.880
M10	102.68	117.749	.510	.878
M11	103.34	116.224	.494	.878
M12	103.39	117.434	.472	.879
M13	102.66	119.685	.519	.879
M14	102.47	120.256	.554	.878
M15	103.67	116.947	.429	.881
M16	104.44	114.753	.479	.879
M17	103.28	115.978	.452	.880
M18	102.80	116.545	.475	.879
M19	102.76	116.046	.636	.875
M20	103.03	116.794	.486	.879
M21	102.89	117.437	.520	.878
M22	102.84	117.659	.534	.878
M23	102.69	118.076	.553	.877
M24	103.88	118.028	.376	.882
M25	105.07	119.968	.315	.884
M26	102.27	124.577	.280	.883

As seen in Table 6, the item-total correlation values of the items in the scale are between 0.636 and 0.264, and there is no item below 0.2. When the values are lower than .20, the items are considered not to represent the same content area (Piedmont, 2014).

Cronbach Alpha Confidence

At this stage, the internal consistency of the scale was checked and the Cronbach's Alpha value for the entire scale was found to be 0.88. The Cronbach Alpha values of the sub-dimensions of the scale are given in Table 7:

Table 7: Cronbach Alpha Values of the Sub-Dimensions of the Scale

Factors	Alpha
1. Factor	0.79
2. Factor	0.83
3. Factor	0.82
4. Factor	0.83
5. Factor	0.70
6. Factor	0.65

As seen in Table 7, it is seen that the alpha coefficients of the sub-dimensions of the scale vary between 0.65 and 0.83. A confidence coefficient of 0.60-0.70 is generally an acceptable threshold. Values between 0.70 and 0.80 indicate a good level, and values between 0.80-0.95 indicate a high level (Boateng, Neilands, Frongillo, Melgar-Quiñonez & Young, 2018; Gliem & Gliem, 2003; Ursachi, Horodnic & Zait, 2015). In this context, it can be said that both the whole scale and its sub-dimensions comply with the reliability criteria.

Test-Retest Reliability

First of all, the forms were checked and it was seen that there were no missing data. In the second test, two forms, all marked as 5, were excluded from the analysis. To determine whether extreme values were included in the data set, Z scores were examined, and it was seen that Z scores ranged from 1.92 to -2.34 in the first test and between 1.89 and -2.36 in the second test, so there were no extreme values. The normality of both tests was examined with the Kolmogorov-Smirnov test. It was observed that both the first test (df(51), p=0.200) and the second test (df(51), p=0.180) were normally distributed.

After Pearson Product Moments correlation analysis, the correlation coefficients between the two tests were found to be 0.78 in the total score, 0.73 in the first factor, 0.76 in the second factor, 0.60 in the third factor, 0.79 in the fourth factor, 0.77 in the fifth factor and 0.83 in the sixth factor.

The values of the correlation coefficient range from -1.00 to +1.00. Values between 0.9 and 1 are thought to mean a very high level of correlation, values between 0.7 and 0.9 mean a high level of correlation, and values between 0.50 and 0.70 are considered to mean a moderate relationship (Mukaka, 2012; Schober, Boer & Schwarte, 2018). Coaley (2010), on the other hand, states that 0.10 means a weak relationship, 0.30 a moderate relationship, and 0.50 a very strong relationship. In this case, it can be said that the third factor is moderately correlated with the whole scale and other factors at a high level.

Conclusion

In this research, it is aimed to develop a valid and reliable scale that measures the compassionate love perceptions of individuals. The following results were obtained regarding the scale obtained at the end of the research:

- It was determined that the scale, which consisted of 26 items under six factors, explained 63.958% of the total variance and that the scale could measure the perception of compassionate love.

- It was observed that the sub-dimensions of 1) Compassionate Love and Its Function, 2) Compassionate Love and Behaviors, 3) Compassionate Love and Values, 4) Compassionate Love and Its Source, 5) Compassionate Love and Personal Traits, and 6) Compassionate Love and Differences, which are in the six-factor structure, have features that can measure the perception of love.

- It was concluded that to determine the perception of love, it is necessary to determine whether love changes according to different characteristics, the connection between the perception of love and human relations, and the relationship between love and different values.

- It was concluded that all the values obtained as a result of the CFA analysis performed in a new sample for the verification of the factor structure of the scale were sufficient for the verification of the structure, and within this framework, the six-factor structure of the scale consisting of 26 items was confirmed as a model.

- Cronbach's Alpha, item-total correlation, and test-retest correlation values related to the validity and reliability studies of the scale showed that the scale is a valid and reliable measurement tool that can measure the compassionate love perceptions of individuals.

- The score ranges of the scale were determined as 26-46 very low, 47-67 low, 68-88 moderate, 89-109 high, 110-130 very high. As the scores obtained from the scale increase, the level of individuals' love perception also increases positively.

- Within the scope of the research, the following indirect results were also obtained:

- It was concluded that the item writing phase of the scale was very important, increasing the number of items written, the presence of negative items, and unclear and long item statements prevented factorization.

- It was concluded that the CFA values obtained on both the EFA sample and the new sample were very close to each other, and the analysis made on the EFA sample could be used to confirm the structure in scale development studies.

- It has been concluded that AGFI and GFI values are more affected by the sample size, and these values tend to increase as the sample grows.

References

Boateng, G. O., Neilands, T. B., Frongillo, E., A., Melgar-Quiñonez, H. R., & Young, S. L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: A primer. *Front. Public Health, 6*(149), 1-18.

Carpenter, S. (2018). Ten steps in scale development and reporting: A guide for researchers. *Communication Methods and Measures, 12*(1), 25-44.

Castillo, F. (2016). Perceptions on the love of the young people: An assessment based on the love attitude scale. In S. F. Tang & L. Logonnathan (Eds.), *Assessment for learning within and beyond the classroom.* Singapore: Springer Science+Business Media.

Coaley, K. (2010). *An introduction to psychological assessment and psychometrics.* USA: SAGE Publications.

Doll, W. J., Xia, W., X., & Torkzadeh, G. (1994). A confirmatory factor analysis of the end-user computing satisfaction instrument, *MIS Quarterly, 18*(4), 453-461.

Dovidio, J. F., & Penner, L. A. 2001. Helping and altruism. In M. Brewer & M. Hewstone (Eds.), *Blackwell international handbook of social psychology: Interpersonal processes* (pp. 162-195). Cambridge, MA: Blackwell.

Dönmez, A. (1998). *Sosyal psikoloji [Social psychology]*(3rd Edt.). İmge Kitabevi.

Fehr, B., & Sprecher, S. (2009). Prototype analysis of the concept of compassionate love. *Journal of Social and Personal Relationships, 16,* 343-364.

Freedman, J. L., Sears, D. O., & Carlsmith, J. M. (1981). *Social psychology* (4th Edt..). New Jersey: Prentice Hall, Inc.

Fromm, E. (2011). *Sevme sanatı [The art of loving]* (Translation: Ö. S. Karadana). İzmir: İlya Yayınları.

Gasset, J. O. (1995). *Sevgi üstüne çeşitli yaklaşımlar [Various approaches to love]* (1st Edt.). Ankara: Yapı Kredi Yayınları.

Gliem, J. A., & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for likert-type scales. *Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education*, The Ohio State University, Columbus.

Harrington, D. (2009). *Confirmatory factor analysis*. New York: Oxford University Press, Inc.

Hatfield, E., & Sprecher, S. (1998). The passionate love scale. *Handbook of Sexuality-Related Measures*, 449-451.

Hendrick, C., & Hendrick, S. (1986). A theory and method of love. *Journal of Personality and Social Psychology*, 50, 392-402.

Hinkin, T. R. (1995). A review of scale development practices in the study of organization. *Journal of Management*, 21(5), 967-988.

Hoyle, R. H. (2004). Confirmatory factor analysis. In M. Lewis-Beck, A. Bryman & T. Liao (Eds.), *Encyclopedia of social science research methods*. (pp. 169–175). Thousand Oaks, CA: Sage.

Jampolsky, G. (1995). *Sevgi korkudan özgürleşmektir [Love is freedom from fear]* (Translation: S. Serin). İstanbul: Pegasus Ajans.

Jolliffe, I. T., & Cadima, J. (2016). Principal component analysis: A review and recent developments. *Philos Trans A Math Phys Eng Sci., 374*, 1-16.

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.) New York, London: The Guilford Press.

Ladner, L. (2003). *The lost art of compassion: Discovering the practice of happiness in the meeting of Buddhism and psychology*. New York City: Harper Collins.

Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psy, 28*, 563–575.

Lee, J. A. (1977). A typology of styles of loving. *Personality and Social Psychology Bulletin, 3*(2), 173-182.

Li, C. (2015). Confirmatory factor analysis with ordinal data: Comparing robust maximum likelihood and diagonally weighted least squares. *Behav Res, 48*, 936-949.

MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods, 4*(1), 84-99.

Matsunaga, M. (2010). How to factor-analyze your data right: Do's, dont's, and how-to's. International of *Psychological Research, 3*(1), 97-110.

Mîndrilă, D. (2010). Maximum Likelihood (ML) and Diagonally Weighted Least Squares (DWLS) estimation procedures: A comparison of estimation bias with ordinal and multivariate non-normal data. I*nternational Journal of Digital Society, 1*(1), 60-66.

Mukaka, M. M. (2012). Statistics Corner: A guide to the appropriate use of correlation coefficient in medical research. *Malawi Medical Journal, 24*(3), 69-71.

Nemoto, T., & Beglar, D. (2014). Developing likert-scale questionnaires. In N. Sonda & A. Krause (Eds.), JALT2013 *Conference Proceedings*, Tokyo: JALT.

Özen, Y., & Gülaçtı, F. (2010). Duyuşsal alan öğrencilerinden sevgi ve sevgi kuramları (Sevgiye dair söylenceler) [Love and love theories from affective field students (Myths about love)]. *Ordu Üniversitesi Sosyal Bilimler Araştırmaları Dergisi, 1*(2), 135-149.

Penrod, S. (1982). *Social psychology.* New Jersey: Prentice-Hall.

Piedmont, R. L. (2014). Inter-item correlations. In: Michalos A.C. (Ed.) *Encyclopedia of quality of life and well-being research.* USA: Springer, Dordrecht.

Post, S. G. (2003). *Unlimited love altruism, compassion, and service.* USA: Templeton Foundation Press.

Post, B. B. (2010). *From fear to love.* USA: Post Institute & Associates.

Reis, H. T., Maniaci, M. R., & Rogge, R. D. (2014). The expression of compassionate love in everyday compassionate acts. *Journal of Social and Personal Relationships, 31*(5), 651-676.

Rubin, Z. (1970). Measurement of romantic love. *Journal of Personality and Social Psychology, 16*(2), 265.

Schacter, D. (2011). *Psychology.* New York: Worth Publishers.

Schober, P., Boer, C., & Schwarte, L. A. (2018). Correlation coefficients: Appropriate use and interpretation. *Anesthesia & Analgesia, 126*(5), 1763-1768.

Segars, A. H., & Grover, V. (1993). Re-examining perceived ease of use and usefulness: A confirmatory factor analysis, *MIS Quarterly, 17*(4), 517-525.

Sprecher, S., & Fehr, B. (2005). Compassionate love for close others and humanity. *Journal of Social and Personal Relationships, 22*(5), 629–651.

Sternberg, R. J. (1997). Construct validation of a triangular love scale. *European Journal of Social Psychology, 27*(3), 313-335.

Şahin, Ş., Ökmen, B., & Kılıç, A. (2019). The views of students related to compassionate love and compassionate love education course after taking compassionate love education course. *Journal of Qualitative Research in Education, 7*(1), 176-197.

Şahin, Ş. (2020). *Öğrenci, öğretmen ve müdürlerin sevgi, demokrasi ve öğrenci merkezli eğitim algıları[Students, teachers and principals' perceptions of compassionate love, democracy and student-centered education]* (Unpublished doctorate dissertation Düzce University.

Şahin, Ş., & Kılıç, A. (2020a). Okul müdürlerinin sevgi, demokrasi ve öğrenci merkezli eğitim söylemleri [School principals' discourse on compassionate love, democracy and student-centered education]. *Akdeniz Eğitim Araştırmaları Dergisi, 14*(33), 439-471.

Şahin, Ş., & Kılıç, A (2020b). Öğrencilerin sevgi, demokrasi ve öğrenci merkezli eğitim algıları [Students' perceptions of compassionate love, democracy and student-centered education]. *Batı Anadolu Eğitim Bilimleri Dergisi, 11*(2), 294-325.

Şahin, Ş., & Kılıç, A. (2021). Öğrencilerin sevgi algılarına ilişkin kavram ağları [Concept networks on students' perceptions of compassionate love]. *Marmara Üniversitesi Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi, 53*(53), 287-308.

Tabachnick, B. G., & Fidell, L. S. (2012). *Using multivariate statistics* (6. ed.). Needham Heights, MA: Allyn ve Bacon.

Tozduman Yaralı, K., Özkan, H. K., & Güngör Aytar, A. (2016). Yedi ve on yaş çocuklarının sevgiyi ifade ediş biçimlerinin çizdikleri resimlere yansıması [Reflection of seven and ten year old children's expressions of love on the pictures they draw]. *Kastamonu Eğitim Dergisi, 24*(5), 2181-2194.

Underwood, L. G. (2009). Compassionate love: A framework for research. In Fehr, B., Sprecher S., & Underwood L. G.(Eds.) *The science of compassionate love. theory, research, and applications* (pp. 3-25). West Sussex, UK: Blackwell Publishing.

Ursachi, G., I. A., Horodnic, & Zait, A. (2015). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *Procedia Economics and Finance, 20*, 679-686.

Veneziano L., & Hooper J. (1997). A method for quantifying content validity of health-related questionnaires. *American Journal of Health Behavior, 21*(1), 67-70.

Yong, A. G., & Pearce, S. (2013). A beginner's guide to factor analysis: Focusing on exploratory factor analysis. *Tutorials in Quantitative Methods for Psychology, 9*(2), 79-94.

EK 1. Ölçek Maddeleri

Faktörler	Maddeler
1. Faktör Sevgi ve İşlevi	Sevgi şiddeti önler. Sevgi toplumu güçlendirir. Sevgi birlik beraberlik sağlar. Sevgi kötülükleri azaltır. Sevgi kişileri olgunlaştırır. Sevgi mutluluk verir.
2. Faktör Sevgi ve Davranışlar	Bize değer vermeyenler de sevilmelidir. Bize zarar verenler de sevilmelidir. Bizi anlamayanlar da sevilmelidir. Bize fedakarlık etmeyenler de sevilmelidir. Kişileri hatalarına bakmadan sevmek gerekir. Sevgimize karşılık beklemeden sevmek gerekir.
3. Faktör Sevgi ve Değerler	Fedakarlık değerine sahip olabilmek sevgi ile mümkündür. Sevgi olmadan hoşgörü değeri olmaz. Güven değeri ancak sevgi ile oluşabilir. Sevgi olmadan kardeşlik değeri tesis edilemez. Sevgi bütün olumlu değerlerin kaynağıdır.
4. Faktör Sevgi ve Kaynağı	Sevgi Allah'tan gelen bir duygudur. Sevgi Allah'a yaklaştırır. Sevgi yaradılışın kaynağı olan bir duygudur.
5. Faktör Sevgi ve Kişisel Özellikler	Kişileri statülerine bakmadan sevmek gerekir. Kişileri fiziksel özelliklerine bakmadan sevmek gerekir. Kişileri yargılamadan sevmek gerekir.
6. Faktör Sevgi ve Farklılıklar	Farklı ırktan olanlar da sevilmelidir. Farklı fikirlere sahip olanlar da sevilmelidir. Farklı inançlara sahip olanlar da sevilmelidir.

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