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An Examination of the Factors Affecting Prospective Teachers' Perceptions of Faculty Members Using Chaid Analysis

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Abstract

This study aims to examine prospective teachers' perceptions of faculty members and the demographic variables affecting these perceptions. The population of the study consists of undergraduate students attending the Faculty of Education of Van Yüzüncü Yıl University in the 2009-2010 academic year. A total of 500 students in their 1st, 2nd, 3rd and 4th year of university education, selected using stratified random sampling, made up the sample of the study. For data collection, the Perception of Faculty Members Scale (PFMS) developed by the researchers was used. Considering that scores received by the participants from the scale may have a heterogeneous structure, indicating that the individuals in the sample may have come from different populations, the dependent variable was subjected to a two-step cluster analysis. Predictors that may affect students' perceptions were modeled using Chaid analysis. The tree structure that emerged after the Chaid analysis of the Perception of Faculty Members Scale (PFMS) showed that the variables of whether the students perceive the university education they receive as adequate, whether they are attending the department of their choice, and gender were significant predictors of the dependent variable. In this order of significance.

Kev Words

Perceptions of Faculty Members, Prospective Teachers, Chaid Analysis.

Every living organism requires an environment for living. Adjustment to the social environment is a product of perceptions. Perceiving the complex relationships between various stimuli, determining crucial environmental information and developing an expertise on this subject are all vital for survival. This process of perception has a dynamic nature and develops over time. The environment

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constantly offers, besides simple audio and visual stimuli, new affordances such as complex relationships between objects and events. These affordances offered by the environment enable new acts, and experiences gained with each new act make new affordances possible. Thus, the affordances of objects, events, and surfaces are explored and learnt (Miller, 2008, p. 452-455). In the beginning, sensations are meaningless stimuli. However, it is almost impossible for a "pure" sensation to exist. This is because the brain instantly and automatically turns sensations into perceptions. Fields of association in the brain turn these meaningless pieces of information into perceptions (Plotnik, 2009). In sum, each sense organ directs the stimuli it receives to the relevant field of the brain, where they are first turned into meaningless pieces of information and then to meaningful images called perceptions.

Perception is a special event that cannot be observed from the outside, the existence of which we can know only via inference. We can make inferences about the perceptions of an individual by examining his/her behavior, talk or acts. As such, perceptions are longterm and general evaluations concerning the object (including the individual himself or herself) or the issue in question (Petty & Cacioppo, 1986). The process of perception works pretty much the same in every individual, but the perceptual product that emerges is different in each case. In other words, in the process of turning sensations into perceptions, perceptions are also individualized. Personal experiences, emotions, memories, and knowledge individualize the process of perception. In this manner, perceptions become transformed, skewed and even distorted reflections of the real world (Goldstein, 2002). Perceptions are not accurate reflections of events, people, situations or objects. The same stimuli may result in different perceptions. For example, of the three people looking at the same dog, one may perceive the dog as a lovely creature, one may perceive it as scary/dangerous, and one may perceive it as dirty (Morris, 2002). This is why perceptions are individualized interpretations of the objects, animals, humans, and events in the real world, not accurate reflections of them (Plotnik, 2009).

As the process of giving meaning to sensations (Solso, Maclin, & Maclin, 2007), perception in most cases is not determined by the real characteristics of the object of sensation. This is directly related to the phenomenological world of the individual. Because the phenomenological worlds of individuals constantly change, perceptual processes have a dynamic nature. The process of perception thus follows a pattern and contains three different questions: (1) Are there things that are perceived without the individual being aware of them and can they influence behavior? (Abrams & Greenwald, 2000); (2) How big or how unusual do the objects need to be for sensations to turn into perceptions? (Swets, Dawes, & Monahan, 2000); (3) To what degree are perceptions affected or distorted by emotions and personal experiences? (National Advisory Mental Health Council [NAMHC], 1996).

Studies exploring these questions came up important findings concerning perception. Studies trying to answer the first question showed that perception is not the case if the individual is not aware (Epley, Savitsky, & Kachelski, 1999). Studies on the second question, on the other hand, showed that for sensations to turn into perceptions, they need to pass a certain sensory threshold, and that this sensory threshold changes from case to case (Ali & Begüm,

1994; Hellstrom, 2000). Studies on whether perceptions change by cultural and personal experiences showed that perceptions are individualized by experiences, learning, emotions, memories, and expectations (Goldstein, 2002). Based on these studies, the following definition of perception will be used in this study: Perception is the process by which a certain stimulus that passes the sensory threshold is given a meaning in accordance with the phenomenological state of the individual.

This study aims to examine prospective teachers' perceptions of faculty members and the socio-demographic variables affecting these perceptions. The literature review conducted showed that there were many studies on perceptions and attitudes (Bulut, 2009; Medvec, Madey, & Gilovich, 1995; Oral, 2004; Pehlivan, 1994, 2004; Şahin, 2009), but that none explored the factors affecting prospective teachers' perceptions of faculty members. Identification of the factors affecting prospective teachers' perceptions of faculty members can have practical value in providing information about the prospective teachers and in structuring teaching activities (such as pre-planning of the lectures by faculty members, taking student satisfaction into consideration, and developing communication skills). These evaluations are worthy of study in that they can help to predict the behaviors of individuals (Zanna & Rempel, 1988). Thus, this study aims to examine prospective teachers' perceptions of faculty members. In other words, the aim of this study is to examine prospective teachers' "evaluations" of faculty members.

Within the framework of this general aim, prospective teachers' perceptions of faculty members concerning issues such as the preparedness/competence of the faculty members, the evaluation approaches they use and the relations they have with the students were examined, as well as different socio-demographic variables that affect these perceptions. Positive or negative evaluations students have concerning faculty members' academic, social, cognitive, and affective competencies can have positive or negative impacts on the academic achievement of students, and on their levels of satisfaction from their environments. As such, behaviors can be argued to have a significant correlation with perceptions and attitudes (Parker, Manstead, & Stradling, 1995). Thus, understanding the behaviors of prospective teachers requires learning about their perceptions and attitudes. Based upon these considerations, this study aims to examine prospective teachers' perceptions of faculty members.

Method

Research Model-Sample

This study uses the general survey model of description and has a relational survey design. Survey models aim to describe a past or present situation (event, person, object) in its own terms. Relational survey models, on the other hand, aim to examine the presence and/or the level of co-variance between two or more variables (Karasar, 2005).

The population of the study consists of undergraduate students attending the Faculty of Education of Van Yüzüncü Yıl University in the 2010-2011 academic year. There were a total of 3164 students (1943 of them male and 1221 female) attending the Faculty of Education in that academic year. To have a sample that accurately represents the sub-groups in this population, stratified random sampling was used (Balcı, 1997). To this aim, first, the population was first divided into four strata (1st, 2nd, 3rd and 4th year students). Samples to represent each stratum were randomly drawn using the Anderson Sample Size Table for a 95% level of confidence and 5% margin of error (Balcı, 1997). Then, these subsamples were combined to form the sample of the study. A total of 500 students attending the Faculty of Education of Van Yüzüncü Yıl University made up the sample. However, data from 76 students were left out of the study, making the final sample size 424 (287 of them male and 137 female).

Research Instrument - Validity & Reliability

For data collection, the Perception of Faculty Members Scale (PFMS) developed by the researchers was used. Cronbach's Alpha internal consistency coefficient of the scale was found to be 0.92. The total variance explained by the three sub-dimensions of the scale was 50.76%. The first factor explained 39.28% of the variance, the second factor explained 6.00%, and the third factor explained 6.46% of the total variance. These three sub-dimensions were named "Communication Skills", "Teaching Competence", and "Measurement & Evaluation". Cronbach's Alpha (a) reliability coefficient was separately calculated for each of these three subdimensions. Internal consistency coefficient of the first factor, which consisted of 11 items, was 0.87; internal consistency coefficient of the second factor, which consisted of five items, was 0.87; and the internal consistency coefficient of the third factor, which consisted of five factors, was 0.79. Factor loadings of the items on the scale varied between 0.732 and 0.467. Item discrimination values varied

between 0.467 and 0.693 for the first factor, between 0.554 and 0.732 for the second factor, and between 0.539 and 0.724 for the third factor. In addition, the correlations between the items of the scale varied between 0.462 and 0.660 (p<0.05), which shows that the items on the scale are closely related and have a homogeneous structure. A model was generated using exploratory factor analysis, which was then tested using confirmatory factor analysis. The model fit was examined using RMSEA, GFI, NFI, AGFI and RMR measures of fit, and the analyses conducted confirmed the model fit. Fit values were found to be 0.000 for RMSEA, 0.85 for NFI, 0.89 for GFI, 0.081 for RMR and 0.87 for AGFI. These analyses showed that the scale used for the study was valid and reliable.

The Perception of Faculty Members Scale consisted of a total of 21 items in the form of negative statements. Perception levels were measured using a five-point Likert scale. Participants were asked to select one of the "Completely disagree", "Disagree", "Neither Agree Nor Disagree", "Agree" and "Completely Agree" options for each item. The total score from the scale varied between 21 and 105. Higher scores indicate negative perceptions, and lower scores indicate positive perceptions.

Procedure

Considering that scores received by the participants may have a heterogeneous structure, indicating that the individuals in the sample may have come from different populations, the dependent variable was subjected to a two-step cluster analysis. Two-step cluster analysis is a multivariate statistical method that divides a heterogeneous sample into homogenous sub-groups and calculates descriptive statistics separately for each of the homogenous group thus produced (Kayri, 2007). The two-step cluster analysis conducted divided individuals in the sample into three groups on the basis of the scores they received from the scale: negative perception, neutral (threshold) perception, and positive perception. This way, it becomes possible to identify predictors separately for individuals with negative, threshold, and positive perceptions.

The regression model had the total score received from the scale as the dependent variable, and the variables of "whether students find the university education they receive to be adequate", "whether they are attending a department of their choice", "whether they are satisfied with their choice", "the grade they are attending", and "gender" as independent variables. The regression equation was as follows: Score for perception of faculty members = Constant + b1*finding the education received to be adequate or not + b2*attending a department of their choice or not + b3*being satisfied with their choice or not + b4* gender and covariates. The model was tested using the decision tree technique of Chaid analysis. Basic analyses and the CHAID analysis were conducted using SPSS 16.0.

Decision trees are known as a method of non-linear discrimination that can divide independent variables progressively into possible small groups (Türe, Kurt, Kurum, & Özdamar, 2005). The working mechanism of decision trees is based on iteration mechanisms in each branch of the tree, and modeling the strongest interaction between the independent variables that affect the dependent variable (Michael & Gordon, 2004). Chaid analysis, which is a form of decision tree, is considered to be an effective method for dividing the whole data set into two or more nodes in a repetitive manner (Türe et al., 2005). Chaid analysis explores the factors that have a significant effect on the dependent variable, and aims to identify the interactions between the variables in the model and common combinations (Doğan & Özdamar, 2003). From another angle, Chaid analysis is defined as a statistical method for dividing a dataset on categorical variables into detailed homogeneous sub-groups in such a way as to provide the best explanation for the dependent variable. In addition, Chaid analysis can be used when the dependent variable is categorical, ordinal or continuous, and the independent variables are categorical or continuous (Doğan, 2003). Chaid analysis creates an ideal tree structure by identifying pairs that are significant for the cross-tabulation of the categories of independent variables and categories of the dependent variable (Pehlivan, 2006). Chaid analysis is reported to be more effective in identifying the effects of lost data in the model, compared to other decision tree methods (C&RT; Classification & Regression Tree) (Kayri & Günüç, 2010).

Discussion

Results of the study showed that 27.8% of the participants had negative perceptions of the faculty members, and 27.6% had positive perceptions. The rest of the participants had moderate (threshold) levels of perceptions. Keçeci and Taşocak (2009) found that university students' perceptions of faculty members were more negative compared to faculty members' perceptions of the students, paralleling the finding of the present study concerning negative perceptions held by 27.8% of the students. The tree structure that

emerged after the Chaid analysis of the Perception of Faculty Members Scale (PFMS) showed that the variables of whether the students perceive the university education they receive as adequate, whether they are attending the department of their choice, and gender were significant predictors of the dependent variable, in this order of significance. Students who found the university education they receive to be inadequate had more negative perceptions of the faculty members compared to students who found the education to be adequate. Whether students were attending a department of their choice was also a significant factor affecting their perceptions of faculty members. This finding parallels Pehlivan's (1994) finding that educational science students had positive attitudes towards their departments. Students who attend a department of their choice have positive perceptions both of their departments and their faculty members. Students who find the university education they receive to be inadequate are those who are not attending a department of their choice. Students who are attending a department of their choice have more positive perceptions of faculty members compared to those who are not attending the department of their choice. Medvec et al. (1995) found that those who make gains that are close to their expectations have more negative perceptions, which implies that students who are not attending a department of their choice would have more negative attitudes towards their education compared to those who are attending a department of their choice, even though their wish to attend university came true. Thus, the finding concerning the negative perceptions of faculty members among the students who are not attending a department of their choice parallels the findings of earlier studies in the literature. The variable of gender was found to be related to the variable of attending a department of one's choice or not. Bulut (2009) reports a failure to find any gender-based differences in teaching attitudes. Although the significance level of the variable of gender is lower compared to other variables discussed above, a larger portion of the female students report that they are not attending a department of their choice compared to male students, which can be explained with reference to the cultural pressures on women (Nirun, 1994). Yet, female students have more positive perceptions of faculty members compared to male students, probably because they had the chance to get a university education.

The decision trees that emerged from the Chaid analysis of the total scores received from the Perception of Faculty Members Scale (PFMS) and the Chaid analysis of the Communication Skills sub-dimension are similar. The tree structure that

emerged after the Chaid analysis of the "Communication Skills" sub-dimension of the Perception of Faculty Members Scale (PFMS) showed that the variables of whether the students perceive the university education they receive as adequate, whether they are attending the department of their choice, and gender were significant predictors of the dependent variable, in this order of significance. This finding partially overlaps with findings of previous studies. Nearly 60% of the students attending the Faculty of Education report that the department they attend is not one of their top three choices (Çevik & Yiğit, 2009). Male students have more negative evaluations of the teaching competence of faculty members compared to female students (Murat, Aslantaş, & Özgen, 2006). Results of the Chaid analyses of the total scores from the Perception of Faculty Members Scale and from the Communication Skills sub-dimension showed that being satisfied with one's choice of departments and the grade attended were not significant predictors.

The tree structure that emerged after the Chaid analysis of the "Teaching Competence" sub-dimension of the Perception of Faculty Members Scale (PFMS) showed that the variables of whether the students perceive the university education they receive as adequate, and whether they are satisfied with their choice of departments were significant predictors of the dependent variable, in this order of significance. Students who find the university education they receive to be inadequate have more negative perceptions of faculty members compared to students who find the education they receive to be adequate. University students' perceptions of faculty members' communication skills are more negative compared to faculty members' perceptions (Keçeci & Taşocak, 2009). Being satisfied with one's choice of departments is a significant predictor of finding the university education received to be adequate. Students who are satisfied with their choice of departments have more positive perceptions of faculty members compared to students who are not satisfied with their choices. Earlier studies also find that there is a significant correlation between attending a department of one's choice and being satisfied with one's choice of departments (Özkan & Yılmaz, 2010). In the "Teaching Competence" subdimension, the independent variables of gender, grade attended, and attending a department of one's choice were not found to be significant.

The tree structure that emerged after the Chaid analysis of the "Measurement & Evaluation" subdimension of the Perception of Faculty Members Scale (PFMS) showed that the variable of grade attended was the most significant predictor of the dependent variable. Students in their 2nd and 3rd years of university education had more negative perceptions of faculty members' "Measurement & Evaluation", compared to students in their 1st and 4th years. First year students are newly introduced to the university, and 4th year students are about to graduate, perceptions concerning measurement and evaluation are more positive in the beginning and at the end. However, students in mid-grades have more negative attitudes, indicating that there is something about these mid-grades that negatively affects perceptions of measurement and evaluation. There was a significant correlation between attending a department of one's choice or not and attending 1st and 4th grades; and between gender and attending 2nd and 3rd grades. Students who report attending a department of their choice, which is significantly correlated with attending 1st and 4th grades, have more negative perceptions of faculty members' "Measurement & Evaluation" compared to students who report not attending a department of their choice. Similarly, regarding the gender variable which is found to be significantly correlated with attending 2nd and 3rd grades, male students have more negative perceptions of faculty members in this dimension compared to female students. Other studies also find that students who are not attending a department of their choice have more negative perceptions compared to students who are attending a department of their choice (Tanrıöğen, & Baştürk, 2008). Thus, this finding of the present study partially overlaps with the findings of previous studies. Differently from the sub-dimensions of "Communication Skills" and "Teaching Competence" and the total score from the Perceptions of Faculty Members Scale, the variable of finding the university education received to be adequate or not was not significant in the dimension of "Measurement & Evaluation". The variable of being satisfied with one's choice of department or not was not found to be significant in the sub-dimension of "Measurement & Evaluation" either.

Based on the model generated by CHAID, which is a classification tree method, we can argue that the variable of "finding the education received to be adequate or not" is a significant predictor of prospective teachers' perceptions of faculty members in Turkey. The variables of attending a department of one's choice and gender were also significant predictors in the model. Considering that social and individual dynamics may change over time, associations identified in the present study are also subject to change, and prospective teachers' perceptions of faculty members should be studied again using different measurement tools that take possible changes into account. Future studies can examine this subject using different variables and different samples, or by retaining the same variables and using different samples.

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