



A STUDY ON TEACHER CANDIDATES' RECYCLING BEHAVIORS: A MODEL APPROACH WITH THE THEORY OF PLANNED BEHAVIOR

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Abstract

This research explains determinants of recycling behaviors of teacher candidates utilizing Ajzen's theory of planned behavior (TPB). A total of 232 teacher candidates in two campus universities were involved in the study. The data were collected by administration of a survey designed to assess constructs regarding recycling behaviors in a seven-point Likert scale. Multiple regression analyses indicated that recycling behaviors could be predicted by behavioral intentions, explaining 25% of variance. On the other hand, no statistically significant association was observed between recycling behaviors and perceived behavioral control. The linear combination of attitudes, subjective norms, and perceived behavioral control were found to be significantly correlated with teacher candidates' recycling intentions. About 31% of variance in behavioral intention scores could be accounted by the linear combination of these significant determinants. Findings suggest that students with more favorable attitudes and subjective norms, as well as greater perceived behavioral control tend to have stronger intention to engage in a recycling behavior. Additionally, stronger intention could result in recycling behavior. From the findings; some information about the significant determinants of recycling behaviors of Turkish teacher candidates as well as factors associated with the inconvenience of recycling can be derived. This research study suggests that TPB is also a promising framework to predict recycling behaviors of Turkish teacher candidates.

Keywords: Education for Sustainability, Recycling Behavior, the Theory of Planned Behavior

INTRODUCTION

Ajzen, (1991) in his earlier work, the theory of planned behavior stated that there are three conceptually independent predictors of behavioral intention known as the attitude toward the behavior, subjective norm and perceived behavioral control. According to Ajzen, person's intention to do a particular behavior is a fundamental factor in the theory of planned behavior (TPB). It is stated as a general rule that the more favorable the attitude and subjective norm and the greater the perceived behavioral control, the stronger should be a person's intention to engage in a given behavior. The theory of planned behavior also assumes that perceived behavioral control, in company with behavioral intention, can be utilized directly to predict behavioral achievement.

In order to better explain the nature of human behavior, the theory of planned behavior focuses on the antecedents of attitudes, subjective norms, and perceived behavioral control, which in turn could be used to account for intentions and actions. The theory portrays that behavior is a function of beliefs pertaining to that specific behavior. In this context, an individual may hold many different sorts of beliefs about that behavior, but they can act according to limited number of those beliefs at any given moment. These beliefs could be considered as the prevailing predictors of an individual's intentions and behaviors. Regarding the theory of planned behavior, three kinds of beliefs are appraised: behavioral beliefs which are assumed to be associated with attitudes toward the behavior, normative beliefs which are related to subjective norms, and lastly, control beliefs which are evaluated as the determinant of behavioral control. To illustrate, figure 1 could be examined to conceptualize the nature of TPB.

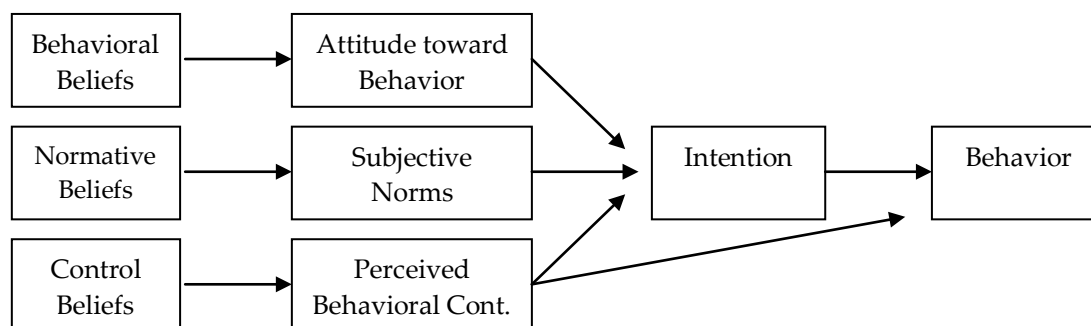


Figure 1. TPB Diagram (Hrubes, Ajzen, & Daigle, 2001, p.166)

The theory of planned behavior has been applied successfully to a number of areas such as healthy eating, hunting, leisure choice, travel mode, unethical behavior, waste management, and recycling. In this study, recycling was chosen due to the crucial role it plays in conservation of natural resources and solid waste management (Vining & Ebreo, 1992; Hopper & Nielsen, 1991). However, recycling is usually avoided believing that it is inconvenient, messy and requires time and effort (Vining & Ebreo, 1992). It's positive long term effects both on society and environment are often neglected (Nordlung & Garvil, 2002). To date many researchers have used TPB to explain recycling behavior (Bagozzi, & Dabholkar, 1994; Boldero, 1995; Cheung, Chan & Wong, 1999; Ewing, 2001; Hopper & Nielsen, 1991; Thøgersen, 1996). The present study is another effort to explain the determinants of recycling behaviors of teacher candidates in a Turkish context by using the TPB. As Tonglet, Phillips, and Read, (2004) claimed, the TPB offers a theoretical framework which determines the factors explaining the recycling behavior.

Recycling is still not commonly carried out to decrease the amount of solid waste in Turkey although Yilmaz, Boone and Andersen (2004) reported that elementary school students perceived recycling as one of the important problems of Turkey. Turkish Statistics Institution reported that the amount of daily municipal waste per person is 1.15 kg in 2008. It was also stated that if all of

these household waste product separated completely, the volume of the waste to be stored would decrease with a rate of 35%. In fact, approximately 12% of household waste, corresponding to 13 million tones, was recyclable. Thus, we could infer that recycling behavior is not a widespread behavior and this issue raises many environmental as well as economical problems. Given the significance of recycling process for sustainable futures, this research aimed to explain determinants of recycling behaviors of teacher candidates utilizing Ajzen's theory of planned behavior. Furthermore, significant predictors of attitudes, subjective norms, and perceived behavioral control in the context of recycling were investigated as proposed by the theory of planned behavior.

For the specified purpose, the teacher candidates attending two campus-universities that offer various recycling opportunities in their campus were focused on in the present study. Informal interviews conducted with the authorities of these recycling projects and some relevant data indicated that the students at these universities generally do not use the recycling bins efficiently, instead, tended to simply throw away recyclable products into the rubbish bins. The main issue is that although provided with many opportunities, it is still questionable why these students still avoid recycling. Accordingly, the present study can be seen as a first attempt to identify determinant of recycling behavior, and to provide some preliminary data which could be used to eliminate or at least reduce this prevalent problem throughout these universities. To our best knowledge, no study has explored Turkish undergraduates' recycling behaviors by employing TPB.

Accordingly, the following research question guided this study:

1. To what extent could teacher candidates' recycling behaviors be predicted by behavioral intentions and perceived behavioral control?
2. To what extent could teacher candidates' recycling intentions be predicted by attitudes, subjective norms, and perceived behavioral control?
3. To what extent could teacher candidates' attitudes, subjective norms, and perceived behavioral control be predicted by the related constructs (behavioral beliefs, normative beliefs, and control beliefs, respectively) as proposed by the theory of planned behavior?

METHOD

Participants

A total of 232 pursuing a degree program at faculty of education in two big campus universities which offer recycling facilities to their students participated the present study. Of the participants, 72% were female students and 28% were male students. The participants were enrolled in the departments of elementary education, secondary science and mathematics education, and early childhood education and anonymity.

Instruments

The data were gathered by having teacher candidates complete survey regarding recycling behavior in a seven-point Likert scale. The authors of this study developed the measuring tool in the light of both the recycling and TPB literatures. The survey included socio-demographic variable as well as statements assessing the each component of the theory of planned behavior, namely recycling behaviors, recycling intentions, recycling attitudes, the subjective norm, perceived behavioral control, and beliefs on the mentioned domains. Reliability and validity issues were discussed in an earlier publication by the authors of the present study (see Tekkaya, Kilic & Sahin, 2011).

Data Analysis

A series of multiple linear regression analysis was conducted to determine the significant determinants of variables on recycling behaviors as proposed by TPB theory (see Figure 1). In this context, a measure of adjusted R^2 was reported to represent the proportion of variance in the criterion variable that can be explained by the predictor variable (Pallant, 2001). The significance level was set to .05. However, it should be noted that the significance level was adjusted by using Bonferroni method which involves dividing alpha level on the basis of the number of analyses conducted. Thus, the new adjusted alpha level became 0.01.

Procedure

The research was conducted ethically following the protocols approved by campus Institutional Review Board (i.e., Research Centre for Applied Ethics). The authors visited the classes in which the instrument implementation took place after getting permission from the instructors. The students were informed about the purpose of the study and the procedure to complete the scales. They also were explained that the findings of the study would have no effect on their school grades. Furthermore, the students were required to complete the instrument on their own. It took about thirty minutes for the students to complete it.

RESULTS

Multiple regression analysis was conducted in order to examine the significant predictors of recycling behaviors. For teacher candidates' recycling behaviors, behavioral intention was found to significantly contribute to such a behavioral construct with a standardized beta weight of 0.50 ($F(1,231) = 74.78, p < 0.001$). The multiple correlation (R) was calculated as 0.50, with and adjusted R^2 of 0.25. Thus, the results showed that behavioral intentions significantly accounted for 25% of the variation in teacher candidates' recycling behaviors. However, nonsignificant relationship was found between recycling behaviors and perceived behavioral control which indicated that perceived behavioral control does not made a significant direct contribution to teacher candidates' recycling behaviors.

A further analysis was conducted to explain how well the selected variables predicted recycling intentions. The linear combination of three predictors; attitudes, subjective norms, and perceived behavioral control were significantly related to students' recycling intentions ($R^2=0.31$, $F(3,231)=34.09$, $p<0.001$). Moreover, approximately 31% of variance in behavioral intention scores could be accounted by the linear combination of these significant determinants. The standardized beta weights of 0.32, 0.28, and 0.20 showed that behavioral intentions were positively related to attitudes, perceived control and subjective norms, respectively.

Further analysis revealed that behavioral beliefs had a predictive power for attitudes ($R^2=0.31$, $F(1,231)=104.83$, $p<0.001$) with a beta weight of 0.56; normative beliefs were significantly related to subjective norms ($R^2=0.25$, $F(1,231)=75.33$, $p<0.001$) with a beta weight of 0.50, and control beliefs were significantly associated with perceived behavioral controls ($R^2=0.18$, $F(1,231)=50.43$, $p<0.001$) with a beta weight of 0.42. Thus, it could be concluded that the belief constructs on the related domains could be used to explain the attitudes toward recycling behaviors, subjective norms, and perceived behavioral controls for Turkish teacher candidates.

Table 1. The Results of Regression Analyses

Criterion Variables	df	F	R	R ²	Sig.
Recycling Behavior	1	74.78	0.50	0.25	0.000*
Behavioral Intention	3	34.09	0.56	0.31	0.000*
Attitudes toward Recycling	1	104.83	0.56	0.31	0.000*
Subjective Norms	1	75.33	0.50	0.25	0.000*
Perceived Behavioral Control	1	50.43	0.42	0.18	0.000*

* Significant at the the new adjusted Bonferroni alpha level

Since the relationships were significant between the beliefs on the related attributes and attitudes, subjective norms, and perceived behavioral control, a direct pathway exists among those variables. Also, by considering the significant contributions that attitudes, subjective norms, and perceived behavioral control made on behavioral intentions; and behavioral intentions made on recycling behaviors, the following path model could be displayed in the present study (see Figure 2).

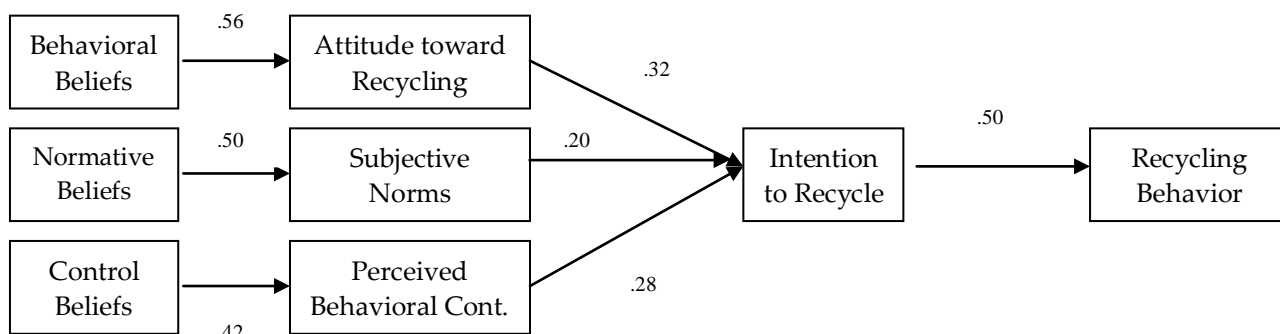


Figure 2. Recycling Behavioral Model for Turkish Teacher Candidates (with Beta Weights)

DISCUSSION AND CONCLUSION

In this study, we aimed to determine the significant factors associated with Turkish teacher candidates' recycling behaviors. The findings of the current study revealed that teacher candidates possessing more favorable attitudes and subjective norms together with a greater perceived behavioral control tended to have stronger intention to engage in a recycling behavior. Additionally, stronger intention could result with more active commitment to recycling behavior. To be more specific, teacher candidates' decision to engage in recycling, to some extent, seems to depend on the expectations or wishes of others. Hence, these results emphasize the importance of normative pressure in addition to attitudinal factors. Family, peers, and instructors, appear to facilitate recycling by serving as behavioral role models (Vining & Ebreo, 1992). As a result of these finding, one may conclude that to encourage or motivate individuals to recycle, these factors should be take into consideration.

These findings were consistent with some of the studies reported in the literature. Studying with undergraduates, Boldero (1995) reported attitudes and intentions to recycle household newspapers to be significant predictors of recycling behavior. She mentioned that although respondents' intentions to recycle newspapers were direct and positive predictors, perceived behavioral control was neither a direct nor indirect predictor. The influence of subjective norms was also found to be nonsignificant. Her study pointed out the importance of psychological factors in determining recycling behavior. In Taylor and Todd's (1995) study, behavior was reported to be positively influenced by behavioral intention and perceived behavioral control. Attitude toward the recycling, subjective norm, and perceived behavioral control were found to be significant predictor of the behavioral intention to recycle. Vining and Ebreo (1992) reported that specific recycling attitudes accounted for a greater percentage of variance in recycling behavior. The findings of Tonglet et al. (2004) study indicated attitudes toward recycling as a main determinant of recycling behavior. The factor that strongly associated with Participants' recycling intentions was also found to be their attitudes to recycling. In another related study with Chinese undergraduates, Cheung et al. (1999) demonstrated that attitude, subjective norm, and perceived behavioral control

significantly predicted behavioral intention. Likewise, several other studies reported the influence of subjective norm on recycling behavior. Among them are household members or friends or neighbors (Ewing, 2001; Oskamp et al., 1991; Taylor & Todd, 1995), block-leader (Hopper & Nielsen, 1991), and peer support (Schultz et al., 1995).

The current research study attempts to take a step forward toward a comprehensive understanding of the determinants of teacher candidates' recycling behavior in Turkey. Findings give clues about factors that determine teacher candidates' reluctance to recycle. The results reported in this study provide curriculum developers and science educators in general, environmental educators in specific, with valuable information concerning recycling behaviors of teacher candidates as the role models of future generations, and contribute to the improvement of the quality of environmental education in Turkey. Of course, more research is also called for to shed further light on the significant determinants of recycling behavior demonstrated by Turkish teacher candidates.

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