PREDICTING RECYCLING BEHAVIORS OF PRESCHOOL TEACHERS BY INCORPORATING ADDITIONAL VARIABLES INTO THE THEORY OF PLANNED BEHAVIOR

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ABSTRACT

PREDICTING RECYCLING BEHAVIORS OF PRESCHOOL TEACHERS
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THE THEORY OF PLANNED BEHAVIOR

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This study scrutinized the factors determining preschool teachers' recycling intentions and behaviors utilizing the Theory of Planned Behavior (TPB). Herein, the present study included the TPB constructs (behavioral beliefs, normative beliefs, control beliefs, attitude toward behavior, subjective norms, perceived behavioral control, behavioral intention, and behavior), and additional variables (moral norms, convenience, and past behavior). Data were collected by 584 preschool teachers working in public schools in the nine districts of Ankara (Altındağ, Çankaya, Etimesgut, Gölbaşı, Keçiören, Mamak, Pursaklar, Sincan, and Yenimahalle) in Turkey through '' Demographic Information Questionnaire'', and ''Recycling Behavior Scale for Preschool Teachers''. A model was developed to investigate the inter-relationships among the constructs and analyzed using path analysis in relation with structural equation modeling which did not cover past recycling behavior construct due to discriminant validity concerns. The proposed model explained 44% of the variance in recycling intentions, and 50% of the variance in recycling behaviors. Results revealed that behavioral beliefs, normative beliefs, and control beliefs significantly determined attitude toward behavior,

subjective norms, and perceived behavioral control, respectively. Morever, preschool teachers' recycling intentions were significantly determined by perceived behavioral control followed by attitude toward recycling, subjective norms, and convenience, but not moral norms. Furthermore, their recycling behaviors were strongly predicted by their recycling intentions, and weakly determined by their corresponding perceived behavioral control. However, convenience, and moral norms did not contribute to the explanation of their recycling behaviors. Results highlighted that an extended. TPB model can be useful for examining teachers' recycling intentions and behaviors.

Keywords: early childhood education for sustainability, preschool teachers, recycling intentions and behaviors, theory of planned behavior, path analysis

ÖZ

OKUL ÖNCESİ ÖĞRETMENLERİNİN GERİ DÖNÜŞÜM DAVRANIŞLARININ PLANLANMIŞ DAVRANIŞ TEORİSİNE ENTEGRE EDİLEN EK DEĞİŞKENLER ARACILIĞIYLA YORDANMASI

Şenyurt, Ezgi

Yüksek Lisans, Okul Öncesi Öğretmenliği Bölümü

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Bu çalışma, okul öncesi öğretmenlerinin geri dönüşüm niyetlerini ve davranışlarını belirleyen faktörleri Planlanmış Davranış Teorisi'ni (PDT) kullanarak incelemeyi amaçlamaktadır. Güncel çalışma, PDT değişkenlerini (davranış inançları, normatif inançlar, kontrol inançları, davranışa yönelik tutum, öznel normlar, algılanan davranış kontrolü, davranış niyeti ve davranış) ve birtakım ek değişkeni (ahlaki normlar, elverişlilik ve geçmiş davranış) içermektedir. Çalışmanın örneklemini, Ankara ilinin dokuz merkez ilçesindeki (Altındağ, Çankaya, Etimesgut, Gölbaşı, Keçiören, Mamak, Pursaklar, Sincan ve Yenimahalle) devlet okullarında çalışan 584 okul öncesi öğretmeni oluşturmaktadır. Çalışma verileri, ''Demografik Bilgi Anketi'' ve ''Okul Öncesi Öğretmenleri için Geri Dönüşüm Anketi'' aracılığıyla toplanmıştır. İlgili değişkenler arasındaki ilişkiyi araştırmak amacıyla bir model oluştulmuş ve bu model yapısal eşitlik modellemesi kapsamında yol analizi kullanılarak analiz edilmiştir. Geçmiş geri dönüşüm davranışı değişkeni ayırdedici geçerliliği sağlamadığı için, bu analizin dışında bırakılmıştır. Önerilen model, katılımcı öğretmenlerin geri dönüşüm niyetlerinin %44'ünü, geri dönüşüm davranışlarının ise %50'sini açıklamayı başarmıştır. Analizler, davranış

inançlarının, normatif inançların ve kontrol inançlarının sırasıyla davranışa yönelik tutumu, öznel normları ve algılanan davranış kontrolünü önemli oranda açıkladığını göstermiştir. Ayrıca, okul öncesi öğretmenlerinin geri dönüşüm niyetleri sırayla algılanan davranış kontrolü, geri dönüşüme yönelik tutum, öznel norm ve elverişlilik değişkenleri tarafından yordanırken; öğretmenlerin ahlaki normlarının bu açıklamaya bir katkısı tespit edilememiştir. Ek olarak, okul öncesi öğretmenlerinin geri dönüşüm davranışları önemli ölçüde onların geri dönüşüm niyetleri tarafından belirlenirken; algıladıkları davranış kontrolü de geri dönüşüm davranışlarının açıklanmasına katkıda bulunmuştur. Diğer taraftan, elverişlilik ve ahlaki norm değişkenleri, katılımcıların geri dönüşüm davranışlarını açıklamada yetersiz kalmıştır. Bu bulgular, genişletilmiş PDT modelinin, öğretmenlerin geri dönüşüm niyetlerini ve davranışlarını açıklamada kullanışlı olabileceğini işaret etmektedir.

Anahtar Kelimeler: sürdürülebilirlik için okul öncesi eğitimi, okul öncesi öğretmenleri, geri dönüşüm niyeti ve davranışı, planlanmış davranış teorisi, yol analizi

In memory of my beloved grandfather, Sadık Bayraktar,

for letting me have his unique love.

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LIST OF ABBREVIATIONS

AGFI	Adjusted Goodness-of-Fit Index
AVE	Average Variance Extraxted
CB-SEM	Covariance-based Structural Equation Modeling
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CR	Composite Reliability
EEA	European Environmental Agency
EFA	Exploratory Factor Analysis
ESD	Education for Sustainable Development
EU	European Union
GFI	Goodness-of-Fit Index
MSW	Municipal Solid Waste
NFI	Normded Fit Index
NNFI	Non-Normed Fit Index
OECD	Organization for Economic Co-operation and Development
PLS-SEM	Partial Least Square-based Structural Equation Modeling
RMSEA	Root Mean Squared Error of Approximation
SD	Sustainable Development
SEM	Structural Equation Modeling

SRMR	Standardized Root Mean Residual
TRA	Theory of Planned Behavior
TPB	Theory of Reasoned Action
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCED	World Commission on Environment and Development
WWF	World Wildlife Fund

CHAPTER 1

INTRODUCTION

In the 18th century, the industrial revolution which set ground for the modern industrialized era was one of the most significant breakthroughs in the world history (Mohajan, 2015). In fact, it has been regarded as the foremost factor which transmuted human life more than ever before (Hobsbawm, 1968) in that it has made the world be contingent upon a continual production which prompted human beings to consume, to ply international trade, to escalate international competition, and to wage war against rival countries day by day (Inglehart & Baker, 2000). Furthermore, worldwide reflections of the industrialization leaded a number of states to engage more in such actions as mass production which brought about a rapid increase in the immigration to those industrial cities (Crafts, 1989). In other words, industrialization paved the way for a heavy acceleration in market economy, urbanization, and production on a global scale (Daunton, 1995). Actually, industrialization which resulted in a striking increase in goods and services moving beyond the extent of national borders (Cap, 2002) incited capitalist economy across the world through the agency of globalization (Huppert & Sparks, 2006; Inglehart & Baker, 2000) which refers to the extension, intensification and acceleration of worldwide interconnectedness (Held, McGrew, Goldblatt & Perraton, 1999). This interconnectedness has triggered ever-growing economic growth and culminated in getting people beyond the borders of their nations (Maekele, 2016) by fostering interdependency of a nation on one another's natural resources (Stromquist, 2002). As a result of each action taken toward the economic production, an immense amount of waste revealed at an international level (Daly & Farley, 2004).

As the industrialization and its echo spread around the world, global human population which was around 800 million in 1750 indicated a rapid rise in that it reached two billion by the end of 1960, around six billion through the end of the 20th century (Maddison, 2003), and, an approximate number of 7.6 billion through the mid-2017 (United Nations Department of Economic Social Affairs, 2017). In parallel with the ever-growing global human population, human activities have deteriorated the overall world ecosystem adversely (Chaisamrej, 2006; Huppert & Sparks, 2006; Vlek & Steg, 2007). To specify, ecosystem of the planet Earth has been globally bankrupted for decades, as a consequence of human-induced factors or anthropogenic factors such as interactions of humans with the natural environment to meet their increasing needs for commodities such as timber, water, food, fuel, and fiber (Hobsbawm, 1968; Millennium Ecosystem Assessment, 2005). In other words, irresponsible human behaviors have severely jeopardized the natural ecosystem for a long time so as to satisfy their needs by utilizing natural resources. For these reasons, rapidly growing and interdependent human population has been associated as a constraint with other global problems (Huppert & Sparks, 2006). According to the Living Planet Report (WWF, 2008), the exponential human population has increased more than twice as much demand for natural resources than the past 45 years due to the growing individual consumption. In other words, humans put strain on the natural resources of the planet Earth in order to meet their increasing needs.

Consumption activities of humans unavoidably generate waste (Karishnamurti & Naidu, 2003; Moraru, Babut & Cioca, 2010), thus different types of wastes have been discharged to the environment at alarming rates for decades (El-Assaly & Ralph Ellis, 2001; Gerbens-Leenes, Nonhebel & Krol, 2010; Organization for Economic Co-operation and Development [OECD], 2008). For example, the total amount of municipal solid waste [MSW], which includes ‘‘a household waste originating from households (i.e. waste generated by the domestic activity of households) and similar waste from small commercial activities, office buildings, institutions such as schools

and government buildings, and small businesses that treat or dispose of waste at the same facilities used for municipally collected waste.'' (OECD, 2013, p.48), globally created each year equals to 1.3 billion metric tons, and it is anticipated to reach an approximate quantity of 2.2 billion metric tons by 2025 (Clark and Matharu, 2013; Hoornweg & Bhada-Tata, 2012). To put it in a different way, 1.2 kg/capita/day MSW is currently generated by 3 billion urban residents, and 1.42 kg/capita/day MSW is expected to be generated by 4.3 billion urban residents by 2025 (Hoornweg & Bhada-Tata, 2012). In this respect, urban areas in which extreme amounts of solid wastes are generated based on human population and economic growth have an important place in waste generation (Karishnamurti & Naidu, 2003), on account of the fact that 70% of the global human population is expected to be populated in urban areas by 2050 (United Nations [UN], 2009). According to Hoornweg and Bhada-Tata (2012), 572 million tons of solid waste, nearly half of the global waste, are generated annually in the OECD countries, in which two-third of the human population is populated in urban areas (OECD, 2013). That is to say, an average of 2.2 kg/capita/day MSW is generated in OECD countries, ranging from 1.1 to 3.7 kg per capita (Hoornweg & Bhada-Tata, 2012). These numbers based on waste generation boil down to one thing – the evolution of humans from 'make do and mend' to a 'throwaway' society (Lave, Hendrickson, Conway-Schempf & McMichael, 1999).

According to the Living Planet Report (WWF, 2014), current demands of humans for the planet are 50% more than its capacity to sustain, because people have been using the natural resources without considering the capacity of the planet to afford their increasing needs. More specifically, humanity tend to diminish forests faster than they grow, engage in fishery activities more than the marine can renew, or exhale more carbon into the atmosphere beyond the capabilities of the forests and marines to assimilate, resulting in depleted natural resources and accumulated wastes (WWF, 2014) which trigger environmental, social, economic, and public-health problems (e.g. Gutberlet, 2008; Vidanaarachchi, Yuen & Pilapitiya, 2006; Hoornweg & Bhada-Tata,

2012). Pollution is the primary problem posed solid wastes such as plastic, paper, metals, glass, wood, and food residuals (Ndubuisi-Okolo, Anekwe & Attah, 2016; Hoornweg & Bhada-Tata, 2012). To illustrate, at least 18 million tons of plastics, 10% of plastics produced within a year, enter seas (Velis, 2014), while an amount of plastics ranging from 4.8 to 12.7 million tons annually enters oceans (Jambeck et al, 2015). Furthermore, waste disposal triggers environmental problems by emitting deleterious substances such as heavy metals, acidic liquids, and alcohols into soil, water resources, and air (Hutchinson, 2008). In their study Platt and Lombardi (2008) demonstrated that landfills in which wastes such as MSW are stored are the root cause of greenhouse gas emission leading to global climate change, because these facilities which are expected to emit 5.2% of the worldwide methane gas by 2025 promote the greenhouse gas emission by releasing methane gas to the atmosphere. With regard to MSW, on the other hand, landfills contribute nearly half of the methane gas emitted to the atmosphere (IPCC, 2007).

Society has been affected by the negative impacts of wastes, as well (Carr, 1996; UNEP, 2015) in that waste disposal brings about environmental injustice for the poor people dwelling in the nearest locations to the waste facilities (Carr, 1996). A study conducted by Carr (1996) illustrated that even though waste facilities are not founded at the nearest distance to the poor neighborhoods, this study revealed that low-income inhabitants dwelled near waste facilities, because of the lower value of estates caused by residential proximity to the waste facilities. Besides social impacts of wastes, it is an indivisible part of economy (Cremiato et al., 2018), namely circular economy (UNEP, 2015). To put it in a different way, wastes has a great potential to be an economic resource. This means that global economy would be adversely affected when wastes are not managed or engaged in economic activities. What's more, wastes create important health problems in humans such as respiratory problems, infections resulted from engaging in the direct contact with the polluted residuals (Ladu, Osman & Lu, 2012), spread of cholera, and dengue fever (UNEP, 2015). In this respect, it can

be inferred that unsustainable consumption patterns of humans and their impacts on the nature through waste generation have leaded the planet to a stalemate.

Considering the overall influences of wastes generated through over-consumption on the world, it is crystal clear that the world's inhabitants have suffered from the consequences of wastes generated and disposed (Hoornweg & Bhada-Tata, 2012). To put differently, it has been much more vulnerable and corrupted as compared to it was a couple of decades ago. Since humans are regarded as an inseparable part of the planet Earth (Misiaszek, 2012), it would not be wrong to enunciate that the more balance of the planet is damaged because of human-related factors, the more humans are likely to be suffered from their consequences (Galeano, 2011). Among people who have been experiencing the aforementioned stumbling blocks in a sort of way, there is a rising concern about the negative effects of those problems especially on young children (Hofferth & Curtin, 2005). That is, young children have been victimized in unsustainable ways of humans' life and their impacts on the environmental, social, economic, and public-health terms. According to Alam and Ahmade (2013), there are several living organisms of top priority because of the destructive impacts of the solid waste disposal, namely dwellers in places where improper waste treatment strategies is utilized, dwellers popularized around waste landfills, waste workers, animals, and children, especially pre-school children. Because of the destroyed natural environments resulted from unplanned urbanization, vandalized open spaces, green spaces, natural habitats (Elliot, 2010), and polluted areas bearing the traces of wastes, today's children lag behind children living in past decades in terms of interacting with the nature (Edwards, Skouteris, Rutherford & Mackenzie, 2012) through outdoor activities such as climbing trees and playing outside (Hofferth & Curtin, 2005). The current situation of them has been called as ''nature deficit disorder'' which has severe impacts on not only individuals but also on the whole societies (Louv, 2005). Hence, children have been considered as the most sensitive members of humankind who are

easily affected by those global problems and the unsustainable conditions (Davis, 2008; Haines, Kovats, Campbell-Lendrum & Corvalan, 2006).

On account of the extreme pressure on the finite biosphere resulted from unsustainable living of humankind, the term of sustainable development has sprung to life as a promising solution in order to have a sustainable future (Peterson 1997). In 1987, the World Commission on Environment and Development (WCED) published a report ‘‘Our Common Future’’ or the ‘‘Brundtland Report’’ in which sustainable development (SD) has been defined as the ‘‘development that meets the needs of the present without compromising the ability of future generations to meet their needs’’ (WCED, 1987, p.43). In order to support well-being of the current generation, and that of future generations, it was emphasized that the three embedded principles of SD, namely economy, environment, and society, must be focal points of future actions towards SD (WCED, 1987). At this point, proenvironmental behaviors have been regarded as a way of having a sustainable future, and recycling behavior which is directly related to the three pillars of SD has been considered as the most promising pro-environmental behavior for becoming a sustainable society (Cheung et al., 1999), and it may be the starting point for exhibiting other pro-environmental behaviors (Berger, 1997).

Some of the important reasons lying behind the critical importance of recycling in becoming a sustainable society are widely given place in the extant literature. It contributes to diminish the amount of solid waste stored in landfills, to reduce greenhouse gas emission which results in climate change (Ackerman, Monosson & Black, 2008; Agunwamba, Egbuniwe & Ogwueleka, 2003), to reduce pollution by minimizing the demand for raw materials, to conserve energy, to create opportunities for new jobs in the relevant work area, to benefit from useful wastes by reforming them (Agunwamba et al., 2003), and to conserve the environment (Tonjes & Mallikarjun, 2013). For these reasons, recycling is an important pro-environmental

behavior promoting environmental, economic, and social pillars of sustainability by managing global wastes (Bing et al., 2015).

The urgent need for a sustainable future has proceeded to lead nations of the world to embark upon an international enterprise such as United Nations Conference on the Environment and Development ([UNCED, 1992) held in 1992 and widely known as the ‘‘Rio Summit’’ or the ‘‘Earth Summit’’. In consequence of the conference, two important end-products revealed, namely the ‘‘Rio Declaration on Environment and Development’’ which underscored the diversifying responsibilities of nations to achieve SD, and the ‘‘Agenda 21’’ which stressed the urgency of taking a globally active stance to actualize SD by improving quality of life, utilizing natural resources sufficiently, protecting the planet, and achieving sustainable economic development in consideration of the environment and the mankind (UNCED, 1992). In Chapter 21 of the Agenda 21, UNCED (1992) put a strong emphasis on the necessity for minimizing wastes and maximizing waste management through reusing and recycling activities along with public education. On this basis, Chapter 36 of the Agenda 21, namely Education, Training and Public Awareness, gave a significant place for the critical role of education in fostering SD through raising the awareness of children, youth and adults towards the environment, and stressing their responsibilities on this issue by concentrating the power of education over changing attitudes, behaviors, values and skills (UNCED, 1992). This is to say that the promising attempts to evolve into a sustainable society would be cumbersome if the vital importance of education in having a sustainable future continues to be underestimated in today’s world.

Besides the aforementioned reports, in Thessaloniki Declaration (UNESCO, 1997a) it was stressed that education should be at the hearth of sustainable development, in addition to environmental, economic, and social pillars. In a similar vein, UNESCO (1997b) recommended that education be at the center of the upcoming actions and strategies to be adopted for achieving SD, since education is the only way of instilling

humans with appropriate attitudes, values, behaviors and lifestyles, and raising individuals who have necessary awareness toward the global issues and who are well-equipped with a comprehensive knowledge of how they can preserve and sustain the natural wealth of the world (UNESCO, 1997b). In a parallel way, education was pointed by Emanuel and Adams (2011) as the best initial point of sustainable practices such as performing pro-environmental behaviors, and by Schumacher (1973) as ‘‘the greatest resource’’ for building a sustainable future (p.64). In this regard, education for sustainable development (ESD) has been referred to promote people to construct knowledge, and adopt values and skills in order to engage in decision making processes about not only individual and collective but also local and global ways of performing actions, resulting in the betterment of life now and without harming the planet Earth for the next generations (Sustainable Development Education Panel, 1998). Moreover, it is the most proper way of raising a generation that has necessary knowledge and consciousness of SD (Moroye, 2005). At this point, UNESCO (1997b) paid a specific attention to basic education which covers the education of pre-school and primary school-age children in that it forms the basis of every other educational levels. Hence, education was considered as not only the most powerful vehicle but also the best hope of humankind for transforming the current unsustainable situation of the society into a sustainable world by giving precedence to basic education (UNESCO, 1997b). That is, education undertaken in the early years of life is the initial point for taking actions towards ESD (UNESCO, 1997b).

Even though the special interest in ESD has been disseminated across the world, UNESCO (2008) directed a mainstream attention to ESD by publishing the Gothenburg Recommendations on Education for Sustainable Development which is a call for taking a global action towards enhancing and consolidating ESD. Subsequently, a current attempt taken by UNESCO (2005) to announce the United Nations Decade of Education for Sustainable Development (2005-2014) has given birth to early childhood education for sustaianbility (ECEfS). On this basis, early

childhood education, which provides planned educational process for young children between the ages of zero to eight with promoting their cognitive, physical, socio-emotional, language, and personal development (Gordon & Browne, 2008), has been regarded as ‘‘a natural starting point’’ for ESD, since it covers the period when children in early ages contain an extensive power within itself to learn the world and develop their skills (Doverborg & Pramling-Samuelsson, 2000). To this respect, results of a considerable number of research underscored the significance of brain and cognitive development of children in early ages (Wolfe & Brandt, 1998). Furthermore, young children gain and develop such critical skills as thinking, being, knowing, and acting as well as enhancing their social skills by engaging in social interactions with others and their surrounding (Pramling-Samuelsson & Kaga, 2008). In addition, since young children are considered as capable individuals who are able to create their own identity, foundations of knowledge, attitudes, and values of SD should be laid in the early years (Pramling-Samuelsson, 2011). In fact, early childhood period is the time not only sustainable behaviors or pro-environmental behaviors such as recycling are started to be gained (Davis & Gibson, 2006) but also critical life and learning abilities are gained in order to act for change and improve life standards of humans around the world (Pearson & Degotardi, 2009).

In order to take advantage of the potential of early childhood education for evolving into a sustainable society and raise active citizens of a sustainable future, preschool teachers who promote children’s learning of sustainability issues as well as practices should be given priority (Elliot & Davis, 2009). According to Vining and Ebreo (1992), teachers are behavioral role models who encourage children to be active in achieving SD. According to Wals (2006), teachers play a mediator role in children’s learning about sustainability issues in a formal way. Moreover, they are the agents of change for ESD, because of their power for change or innovation (Beckford, 2008; Havelock & Zlotolow, 1995) and their role in expanding the capacity of children in environmental issues by raising their awareness upon preservation and developing

their problem-solving skills (Beckford, 2008). According to Salonen and Tast (2013), preschool teachers consciously and subconsciously transmit their beliefs, attitudes, and values to young children through their practices. Since children at early ages acquire basic beliefs, attitudes, behaviors, and habits which have an effect on them in the following years, preschool teachers have an immense power for instilling them with important attitudes, skills, values, and behaviors in order to raise active young generations for sustainable development (Davis & Gibson, 2006; Wells & Lekies, 2006). In this respect, preschool teachers who serve as the guiding force for young children to adopt sustainable behaviors towards ESD can help them be aware of not only environmental but also economic, social and cultural issues in order to become a sustainable society (Cincera, Kroufek, Simonova, Broukalova, Broukal & Skalík, 2015).

According to Tenth Development Plan of Turkey (Ministry of Development, 2013), it was emphasized that wastes must be integrated into the national economy. This emphasis was iterated in the Waste Management Symposium Final Declaration (Ministry of Environment and Urbanization, 2017) by highlighting the necessity of evolving from a linear economy to a circular economy to take advantages of waste management. In this respect, it was underscored in the report that although 31 million tons of waste were collected within a year of which 27 million tons or 87% of the total amount of waste were municipal wastes, only 15% of these wastes were recycled (Ministry of Environment and Urbanization, 2017). Based on the information, one can infer that recycling as one of the most important pro-environmental behaviors (Vining & Ebreo, 1992), have not totally adopted by people living in Turkey.

A slew of studies which underlined that young children have more tendency to be knowledgeable and concerned with global environmental issues than adults (e.g. Arcury & Christianson, 1990). Moreover, they have a great potential to understand ESD issues and adopt pro-environmental behaviors such as recycling (Davis &

Gibson, 2006), since they are conscious of what happens in their surroundings (Pramling-Samuelsson, 2011; Pearson & Degotardi, 2009). On this basis, research has illustrated that not only belief system but also behaviors of children who are the future leaders and policy makers can be easily shaped as compared with adults, and their point of views will be more resistant to be changed as they grow up (Frisk & Larson, 2011). For this reason, preschool teachers who are the role models for young children and who are responsible for equipping them with desired behaviors are of paramount importance in their life (Vining & Ebreo, 1992). In this regard, understanding the determinants of recycling behaviors of preschool teachers in Turkey can contribute young generation to adopt recycling behaviors in a permanent way.

Considering the relevant literature regarding recycling, the determinants of recycling behavior were identified by means of different theoretical frameworks used by a great deal of researchers. Even though there are considerable numbers of theoretical frameworks for the systematic explanation of the major factors influencing recycling behavior, the most popular and prominent theories are the Theory of Reasoned Action ([TRA], Ajzen & Fishbein, 1980), the Theory of Planned Behavior ([TPB], Ajzen & Fishbein, 1991) which is the extended version of the TRA, Norm Activation Theory of Schwartz (Schwartz, 1977). On the other hand, among those theoretical frameworks the TRA and TPB have been regarded as the two extensively-utilized theories (Chan & Bishop, 2013), particularly in investigating intentions and behaviors regarding recycling (Botetzagias et al., 2015; Boldero, 1995; Cheung et al., 1999; Poskus, 2015; Tekkaya et al., 2011; Tonglet et al., 2004; Valle et al., 2005). In consideration of the importance of recycling and role of preschool teachers in achieving sustainable development, the theoretical background of this study is based on the TPB variables (recycling beliefs, attitude toward recycling, subjective norms regarding recycling, perceived behavioral control over recycling, intention to recycle, and recycling behavior) as well as three additional variables (moral recycling norms, convenience

of recycling, and past recycling behavior) so as to investigate the motives lying behind the recycling intentions and behaviors of preschool teachers.

1.1 The Theory of Planned Behavior

The Theory of Planned Behavior (Ajzen & Fishbein, 1991) is one of the widely-used theory so as to investigate specific human behaviors (Perkins et al., 2007) and has been utilized as a conceptual framework in various research fields such as social, psychological, behavioral, health, and educational sciences, as well as business sector in order to clarify the background of human behaviors. To exemplify, it was utilized in research about career choice (e.g. Khapova et al., 2007), pro-environmental behavior (e.g. Harland et al., 1999) such as household energy saving usage (e.g. Abrahamse & Steg, 2011), sustainable consumption (e.g. Richetin et al., 2012). In addition, there is a large body of literature in which the TPB has been used in order to systematically examine the determinants of recycling behavior (e.g. Boldero, 1995; Chan, 1998; Chan & Bishop, 2013; Chen & Tung, 2009; Cheung et al., 1999; Chu & Chui, 2003; Poskus, 2015; Shrestha, 2014; Tonglet et al., 2004; Wan et al., 2014).

As a successor of the Theory of Reasoned Action ([TRA], Ajzen & Fishbein, 1980), the TPB has been developed as a theoretical framework in order to investigate the factors lying behind behavior and behavioral change (Ajzen, 2001). The TRA assumes that intentions of humans direct them to act voluntarily, and intentions toward a behavior are determined by psychological factors, namely attitudes toward behavior, and subjective norms about behavior which are determined by the behavioral beliefs and normative beliefs, respectively. (Ajzen & Fishbein, 1980). Since a behavior is a volitional in nature in the TRA, it was revised by incorporating one more construct into the theory which affects the behavioral intention, namely perceived behavioral control which clarifies non-volitional behaviors (Tonglet et al., 2004). In this way, the theory was renamed as the TPB (Ajzen & Fishbein, 1991). According to Ajzen (1991), perceived behavioral control which combines not only self-efficacy but also

controllability refers to the individual perception regarding how much easy or difficult to perform a behavior is. What is more, it is determined by control beliefs (Ajzen, 1991). According to Ajzen (1991), perceived behavioral control has not only a direct impact on behavioral intention but also a positive influence on the relationship between behavioral intention and the corresponding behavior. Indeed, the more a person has perceived control over a certain behavior, the more this person is likely to have behavioral intention towards this behavior and engage in the relevant behavior (Ajzen, 2005). On the other hand, it was asserted by several researchers that it weakly influences the relationship between behavioral intention and behavior (e.g. Ajzen & Madden, 1986; Kimiecik, 1992). Moreover, among the constructs of the TPB, behavioral intention has been regarded as the strongest factor lying behind a corresponding behavior (Ajzen, 1991; Boldero, 1995; Poskus, 2015; Tekkaya et al., 2011). Herein, it was asserted that the predictive power of each construct on behavioral intention vary according to the intention to be studied (Ajzen, 2005). This means that attitudes toward behavior can be more related to behavioral intention than the relevant subjective norms in some cases, whereas subjective norms can have a stronger relationship with behavioral intention than attitudes toward that behavior in other cases. In this respect, Figure 1.1 indicates theoretical scheme including each construct of the TPB

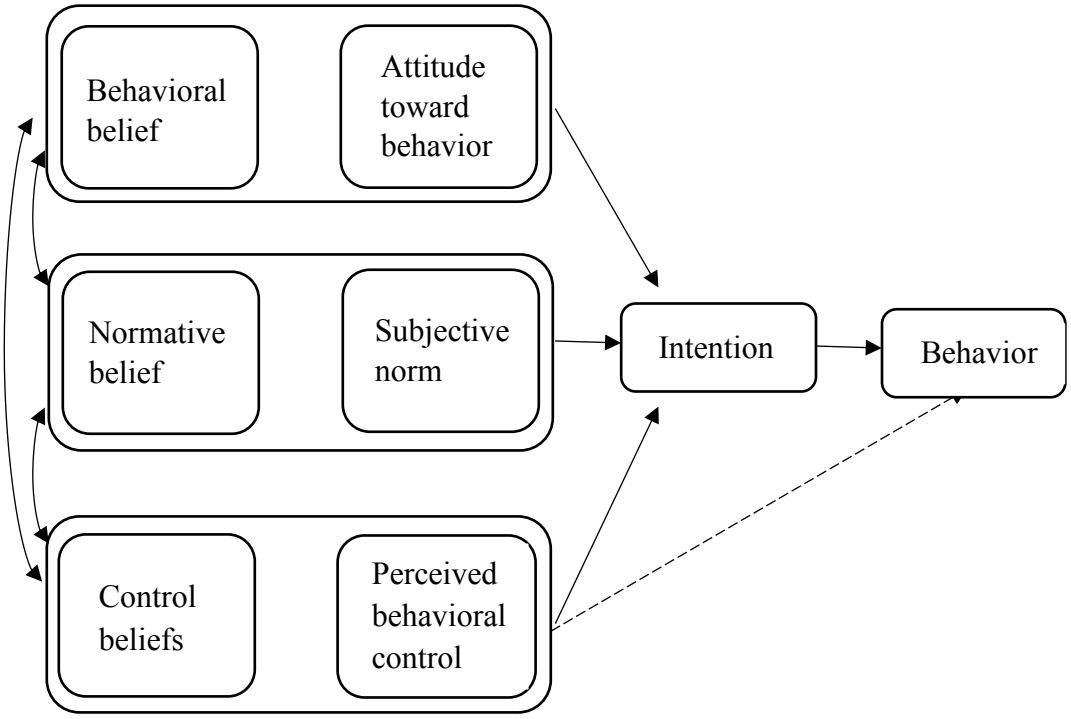


Figure 1. 1 The Theory of Planned Behavior (Ajzen, 2005)

According to Ajzen (1991), one of the most advantageous feature of the TPB is that external variables can be incorporated into the theory. In fact, Ajzen (1991) emphasized that additional variables can be included as predictor variables. In addition to him, a considerable number of researchers recommended that additional variables be integrated in order to enhance its predictive power in explaining recycling behavior (e.g. Cheung et al., 1999; Tonglet et al., 2004). In this regard, further predictive variables were incorporated into the theory within the scope of recycling such as self-identity (e.g. Nigbur et al., 2010), moral norms (e.g. Chan & Bishop, 2013; Chen & Tung, 2010; Gadiraju, 2016; Tonglet et al., 2004), past behavior (e.g. Boldero, 1995; Cheung et al., 1999; 2013; Terry et al., 1999; Tonglet et al., 2004), and convenience (e.g. Boldero, 1995; Wan et al., 2012).

According to Esa (2010), attitudes toward environmental issues play a critical role in leading educators to engage in remedying solutions for environmental problems and

in transferring environmental skills, knowledge, and attitudes to children by means of educational applications. Moreover, attitudinal changes are regarded as building blocks for changing behaviors in that alterations in attitudes brings about behavioral change (Hungerford & Volk, 1990). In a more specific perspective, a great deal of research has examined the relationship between attitudes toward recycling and actual recycling behavior (e.g. Boldero, 1995; Cheung et al., 1999; Chu & Chiu, 2003; Poskus, 2015; Taylor & Todd, 1995; Tekkaya et al., 2013; Tonglet et al., 2004; Wan et al., 2012). When the results of these studies and more other studies were investigated, it was found that there were inconsistencies demonstrating that attitude toward recycling was not a significant predictor of recycling behavior (e.g. Chaisamrej, 2006; Poskus, 2015), a considerable number of studies found a high and positive correlation between attitudes toward recycling and recycling behavior (e.g. Boldero, 1995; Chan, 1998; Cheung et al., 1999; Chu & Chiu, 2003; Kahriman-Öztürk, 2016; Taylor & Todd, 1995; Tekkaya et al., 2013; Wan et al., 2012). Therefore, taking into account attitudes of preschool teachers toward recycling has a great value for having an understanding of their recycling behavior.

Impacts of social referents such as family members and colleagues on environmental behaviors such as recycling behavior have been widely focused on through the agency of the TPB (e.g. Armitage & Conner, 2001; Boldero, 1995; Chu & Chiu, 2003; Lucy & Bishop, 2013; Oskamp et al., 1991; Wan et al., 2012). Even though subjective norms were not found by several scholars as a significant predictor of recycling behavior (e.g. Armitage & Conner, 2001; Boldero, 1995; Terry et al., 1999), these norms were regarded by other researchers as a significant determinant of recycling behavior (e.g. Oskamp et al., 1991; Pakpour et al., 2014). For example, Oskamp et al. (1991) highlighted in their study that significant others such as friends who recycled were a significant determinant for one to engage in recycling. In addition to attitudes and subjective norm regarding recycling, perceived behavioral control over recycling has been stressed as an important predictor for recycling intention in the TPB studies (e.g.

Boldero, 1995; Chen & Tung, 2010; Chu & Chiu, 2003; Tonglet et al., 2004). Among these research, whereas perceived behavioral control was found as an insignificant predictor of recycling behavior in few research (e.g. Boldero, 1995; Chen & Tung, 2010; Davies et al., 2002, it strongly predicted recycling behaviors studied by many other researchers (e.g. Chu & Chiu, 2003; Taylor & Todd, 1995; Tekkaya et al., 2011; Terry, et al., 1999; Tonglet et al., 2004).

Besides the TPB variables, namely attitude toward behavior, subjective norm, and perceived behavioral control, a large number of researchers recommended incorporating additional variables into the theory in order to explain a certain behavior in a better way (Ajzen, 1991). In this respect, convenience has been emphasized to be included in the theory so as to improve the predictability of recycling behavior in that individuals tend to recycle provided that engagement of recycling is convenient for them to perform (e.g. Boldero, 1995; Gadiraju, 2016; Nixon and Saphores, 2009). To illustrate, it was underscored that convenience is one of the main determinants of consumption behaviors in that the more collection point is closer to dwellers, the more they collection is occurred in this area (e.g. Kollmuss & Agyeman, 2002). Furthermore, since perceived behavioral control does not sufficiently enable researchers to consider situational factors (e.g. Tonglet et al., 2004), it was suggested that the TPB be elaborated by integrating convenience into the TPB research as an additional variable (e.g. Chen & Tung, 2010; Chan & Bishop, 2013; Gadiraju, 2016; Phillippsen, 2015; Tonglet et al., 2004). In consideration of the integration of convenience as an additional variable into the theory, although a significant correlation was not found between convenience for recycling and recycling behavior (e.g. Gadiraju, 2016), there were other research which highlighted the necessity of the integration of convenience into the TPB studies regarding recycling (e.g. Boldero, 1995; Kelly et al., 2006; Phillippsen, 2015; Wan et al., 2012). To exemplify, the study of Kelly et al. (2006) indicated that availability of convenience for recycling facilities would encourage university students and employees of the university more to exhibit

recycling behavior. Although Boldero (1995) found that there was no significantly direct relationship between convenience for recycling and recycling behavior, testing whether a significantly direct relationship between convenience for recycling and recycling behavior can promote the predictive power of the corresponding model.

Based on the emphasis of several researchers on the inadequacy of subjective norms for predicting behavioral intention within the scope of the TPB (Ajzen, 1991; Armitage & Conner, 2001), it was recommended that moral norms which refer to what extent performance of a behavior is morally right for individuals be incorporated into the theory so as to increase the predictability of a certain behavior (Ajzen, 1991; Thogersen, 1996). In other words, moral norms are related to individual beliefs on whether a certain behavior should be performed or not as compared to social norms which depend on ideas of others. From a general perspective, the crucial positive impact of moral norms has been found on conservation behaviors in Vietnam (Nguyen et al., 2016). In terms of recycling, on the other hand, it has been suggested to be taken into account while predicting recycling behavior (e.g. Davies et al., 2005; Gadiraju, 2016; Poskus, 2015; Tonglet et al., 2004; Xu et al., 2017). To this respect, Tonglet et al., (2004) stated that moral norms should be integrated into a model testing regarding recycling because of its positive effects on recycling intentions of consumers. Furthermore, it was found that moral norms had a significantly direct impact on recycling behavior without the mediator effect of behavioral intention (e.g. Poskus, 2015), therefore testing whether a direct relationship between moral norms and recycling behavior can contribute to the predictability of a model.

According to Ajzen (1991), previous experiences configure the prospective experiences. For example, future teaching experiences are influenced by the past teaching practices (Scruggs & Mastropieri, 1993). In other words, past behaviors of individuals determine how an individual will be likely to behave in the future. Concordantly, Smith et al. (2007) indicated that later consumerism behavior was

independently explained by means of past behavior. In line with these results, other researchers have found that intention and behavior was directly affected by means of past behavior which was not mediated by the TPB variables (e.g. Wells, 2004). In terms of recycling behavior, past behavior has been emphasized as a critical factor in understanding household waste behavior (e.g. Tonglet et al., 2004; Wells, 2004; Xu et al., 2017). For all these reasons, convenience for recycling, moral norms about recycling, and past recycling behavior were incorporated into the study in order to improve the extended TPB's predictive power for explaining recycling behavior of preschool teachers.

Besides the TPB variables and additional variables, socio-demographics have been widely stressed in understanding recycling behavior. In the literature some of the studies using socio-demographic information have indicated inconsistent results regarding socio-demographic information regarding environmental behaviors, specifically recycling behavior. For instance, while gender was not a significant predictor of recycling behavior in some research (e.g. Singhirunnusorn et al., 2011; Vining et al., 1992), several research demonstrated differences in recycling behavior of participants by gender (e.g. Pakpour et al., 2014). For example, women were found to engage in recycling more than men do (e.g. Barr et al, 2005). In addition, while some of the research did not find a significant influence of age on recycling behavior (e.g. Vining et al., 1992), others pointed out a positive correlation between them in that it was shown that elders are more likely to exhibit recycling behavior more than younger individuals (e.g. Barr et al., 2005). Moreover, according to Tanner (1980) and Chawla (1999), natural experiences in childhood has an important impact on the determination of pro-environmental behaviors. For instance, Hsu (2009) highlighted that people who were raised in nature-related places such as rural areas are more likely to exhibit environmental behaviors. On the other hand, people who were raised in the places where do not provide adequate opportunities to connect with the nature such as urban areas were disadvantaged because of the lack of nature-related opportunities. In

other words, people who spent their childhood in rural areas have a more tendency to exhibit environmental behaviors such as recycling than people whose childhood was spent in rural areas. For this reason, there may be difference between the recycling behavior of people who were raised in places while connecting with nature and people who were not raised in such places. In this regard, whether a person spent his/her childhood in a rural or urban area, in village, district or downtown, and in separate house or apartment house can be crucial demographics for having a better understanding of the factors influencing recycling behavior.

1.2 Significance of the Study

In the near future the global human population is expected to be near eight billion by 2025 (United Nations Commission on Sustainable Development [UNCSD], 2002) and nine billion by around 2050s (Lutz & Samir, 2010), if it proceeds to ascent as at the current rate. In order to meet the enormous consumption behavior of the increasing population, it will be necessary for humans to have two more planets like the Earth, if they maintain their current way of consumption in the future (WWF, 2008). On this basis, Neilsen (2005) highlighted that unless people abandon their current consumption habits, there will be extra three billion people on the Earth who will be in need of searching for six more planets like the Earth by 2020. In line with the exponential increases in the global human population, urbanization, and industrialization to respond the needs of humans have prominently augmented the amount of wastes such as paper, plastic, metals, glass, wood, textile, and food residues in the world environment (Hazra & Goel, 2009; Narayana, 2009).

Unsustainable behaviors of humans are considered as the major cause of the unsustainable situation of the planet (Barr et al. 2011; Millenium Ecosystem Assessment, 2005; UNEP, 2015; World Bank, 2012), since the natural ecosystem of the planet Earth has been treated by humans as if it was a ‘‘natural storage’’ and ‘‘garbage can’’ (Liu, 2009). As the global population increases, the planet will carry

an excessive number of people considering not only that the natural resources of the planet are limitless to meet their needs but also that the capacity of the nature to contain their waste within itself is endless and it is proper to dispose those wastes to the natural environment (Liu, 2009). For instance, while the current volume of waste daily generated is around three million tons in the world, it is expected to reach six million tons by 2025 (Hoornweg et al., 2013), resulting in a dramatic rise in the global environmental, social, economic, and public-health problems (Vidanaarachchi, Yuen & Pilapitiya, 2006; UNEP, 2015; World Bank, 2012). For this reason, unsustainable behaviors of humans should be immediately transformed into pro-environmental behaviors in order to remedy those critical problems and to evolve into a sustainable world (Clayton & Myers, 2009; Steg & Vlek, 2009).

According to Maloney and Ward (1973), the vast majority of the environmental problems are rooted in educational problems, because those problems are created by human-related factors or anthropogenic factors such as negative attitudes or improper behaviors toward environmental problems. To put it differently, education can be a strong device for overcoming environmental issues, gaining lasting behaviors, and strengthening the relationship between humans and the nature (Yorek et al., 2010). Since attitudes, knowledge, values, behaviors as well as pro-environmental behaviors are permanently gained in early years of life (Davis & Gibson, 2006), this period of life has an undeniable significance for children in gaining necessary skills regarding environmental issues (Broch, 2004; Kos et al., 2016; Pramling Samuelsson, 2011), actively engaging in environmental problems (Arlemalm-Hagser, 2013; Davis, 2010), and acting for a sustainable future (Martinez-Agut, Ull & Aznar-Minguet, 2014; Liefländer & Bogner, 2014).

Recycling has been regarded not only as the foundation of other pro-environmental behaviors (Berger, 1997) but also as a promising solution for coping with important global problems such as climate change, pollution, and resource depletion and as a

way of becoming a sustainable society (Chen et al., 2015; EPA, 2013; Gadiraju, 2016; Wan et al., 2014; Worrell & Reuter, 2014). Moreover, it contributes to environmental, economic, and social pillars of sustainability by managing global wastes (Bing et al., 2015). Since most of the belief systems and behaviors such as recycling are generated in the early years of life, it is vital to instill young children with an understanding of recycling. Herein, it has been widely emphasized that preschool teachers play an active role in gaining awareness to young children about sustainability and in raising citizens conscious of ESD issues (Elliot & Davis, 2009). Since they are role models for young children to adopt relevant beliefs, attitudes, behaviors, and habits which influence their future life (Pramling-Samuelsson, 2011), they have an important place in making young children active citizens who make efforts for producing solutions for global problems (Davis & Gibson, 2006; Wells & Lekies, 2006).

Since preschool teachers consciously and subconsciously convey their beliefs, attitudes, and values to young children through their practices such as recycling (Salonen &Tast, 2013), taking a detailed consideration of the motives lying behind their recycling behavior is important to have a better understanding of their recycling behavior. Within this scope, conducting this study in Turkey is significant for mainly two reasons. The first one is that Turkey has undergone one of the most striking and transformative urbanization for 70 years as compared with other countries in the world, in that 75% of inhabitants of Turkey are currently popularized in urban areas where economy is based on industrial activities (World Bank, 2015). Since urban areas which are the places where enormous volume of solid wastes is generated and disposed (Karishnamurti & Naidu, 2003) make the major contributions to waste generation, the management of those wastes in urban areas through recycling and their integration into circular national economy are urgent needs for Turkey (Ministry of Development, 2013; Ministry of Environment and Urbanization, 2017). The second reason is that only 15% of the collected municipal wastes can be recycled in Turkey (Ministry of Environment and Urbanization, 2017). This means that people in Turkey were not

accustomed to perform recycling behavior and therefore not engage in such an important pro-environmental activity. For these reasons, the roles of preschool teachers who raise the future decision makers and conscious citizens of the world by equipping them with significant beliefs, attitudes, behaviors, and habits (Davis & Gibson, 2006; Manoli, Johnson & Dunlap, 2007; Weber & Stern, 2011; Wells & Lekies, 2006) to practice beyond the borders of schools (Braithwaite, 2014) are unquestionably critical. In this respect, the current study aims to shed light on the determinants of recycling behaviors of preschool teachers in Turkey using Theory of Planned Behavior as a theoretical framework.

The Theory of Planned Behavior (Ajzen & Fishbein, 1991) is a widely-studied theory which provides researchers to investigate specific human behaviors (Perkins et al., 2007). This theory includes three major constructs, namely attitude toward behavior, subjective norm, and perceived behavioral control (Ajzen, 1991). While some studies found that there was not a significant relationship between attitude toward recycling and recycling behavior (e.g. Poskus, 2015), a slew of studies found a strongly positive correlation between attitudes toward recycling and recycling behavior (Boldero, 1995; Cheung et al., 1999; Chu & Chiu, 2003; Tekkaya et al., 2013; Tonglet et al., 2004; Wan et al., 2012). In addition, some of the researchers indicated that there was not a significant impact of subjective norms on recycling behavior (e.g. Armitage & Conner, 2001; Boldero, 1995; Terry et al., 1999), while others concluded that there was a significant relationship between subjective norms and recycling behavior (e.g. Oskamp et al., 1991; Pakpour et al., 2014). Perceived behavioral control over recycling is the third component of the TPB. While some of the research in the extant literature regarded as an insignificant predictor of recycling behavior (e.g. Boldero, 1995; Chen & Tung, 2010; Davies et al., 2002), there were other researchers in which recycling behavior was significantly predicted by means of perceived behavioral control (e.g. Chu & Chiu, 2003; Taylor & Todd, 1995; Tekkaya et al., 2011; Tonglet et al., 2004). In a similar manner, with regard to the additional variables, while several researchers

reported that moral norms were found to be a one of the strongest predictors of recycling intention (e.g. Botetzagias et al., 2015; Chan & Bishop, 2013; Pakpour et al., 2014) as well as recycling behavior (e.g. Poskus, 2015), there existed other studies in which moral norms were weakly determined recycling intention (e.g. Chu & Chiu, 2003; Wan et al., 2012). In addition to moral norms included in the theory of planned behavior studies as an additional variable, results of the studies in which convenience was used as a direct predictor of recycling intention indicated contradictory results. To specify, convenience was found in some studies to be a significant predictor of recycling intention (e.g. Gadiraju, 2016; Philippsen, 2015; Wan et. al., 2012), whereas some of the studies did not report convenience as a statistically significant predictor of recycling intention (e.g. Tonglet et al., 2004). Besides, a number of research reported that past behavior was found to be a significant predictor of recycling intention (e.g. Cheung et al., 1999; Pakpour et al., 2014; Philippsen, 2015; Tonglet et al., 2004), and even that of current behavior (Boldero, 1995).

In consideration of the extant literature of recycling behavior handled within the scope of the theory of planned behavior, it is clear that the corresponding studies indicated inconsistent results. In this respect, results of the current study are expected to provide a promising step toward clarifying the antecedents of recycling behaviors with a sample of preschool teachers in Turkish context. More specifically, though the agency of the present study, it can be inferred that which factors lie behind Turkish preschool teachers' recycling behaviors can be clarified. In this way, one can have a better understanding about their recycling behaviors. In this aspect, this study can offer an insight on improving the recycling behaviors of these teachers. To the best knowledge of the researcher, it was not found any research in which determinants of recycling behaviors of preschool teachers were focused within the scope of the theory of planned behavior. On this basis, the present study is also expected to function as a guide for both curriculum developers and policy makers so as to extend the scope of education for sustainable development in the early-years education. In this way, preschool

teachers who raise the next generations of the society can adopt better recycling behaviors and open a door for more sustainable future.

In this regard, the present study intended to scrutinize the determinants of recycling behaviors of preschool teachers within the frame of the TPB by integrating three more variables into the theory. Even though there are several other behavioral theories (e.g. Norm Activation Model [Schwartz, 1970], Health Belief Model [Janz & Becker, 1984], and Value-Belief-Norm Model [Stern, Dietz, Abel, Guagnano & Kalof, 1999]), the TPB which centers on why humans behave in a certain way is the most commonly utilized theory to understand human behavior with a rational and detailed point of view (Manfredo, 2008). The TPB is unique in that it offers a more comprehensive explanation about a behavior through the roles of its constructs in permanent behavioral change (Ham, 2013; Petty & Cacioppo, 1986). From a theoretical perspective, unique components of the theory (salient beliefs, attitude, subjective norms, perceived behavioral control, intention, and behavior) have had a critical role in social as well as behavioral science research (Ajzen, 1991). It has been widely used in determining pro-environmental behaviors such as energy conservation (e.g. Macovei, 2015), water conservation (e.g. Kumar et al., 2017), and recycling (Poskus, 2015; Wan et al., 2012). In addition to its ability to examine a considerable number of behaviors, it is open for the integration of additional predictor constructs into the theory (Ajzen, 1991). In regard to recycling behavior, for example, moral norms (e.g. Chu & Chiu, 2003; Tonglet et al., 2004), convenience (Gadiraju, 2016; Wan et al., 2012), and past behavior (Cheung et al., 1999; Tonglet et al., 2004) were successfully incorporated into the TPB studies as predictor variables. Moreover, the TPB which is a parsimonious theoretical framework for comprehending complex human behaviors (Manfredo, 2008) offers a comprehensive causal understanding of social science issues such as waste management, and recycling (Miller, 2017). Furthermore, the TPB which creates a common language for social and natural sciences has been seen as a way of overcoming the problems stemming from the incorporation of social science into

conservation studies (Fox et al., 2006) by means of its function as a bridge between these fields with its potential for adopting a post-positivist approach which is based on the single reality (Miller, 2017). In addition to those strengths of the TPB, several meta-analytic evidences highlighted its powerful predictive utility for a certain behavior in different fields (Armitage & Conner, 2001; Notani, 1998). In this respect, this study was an attempt to investigate to what extent cognitive constructs (behavioral beliefs, normative beliefs, and control beliefs) and psychological constructs (attitudes toward recycling, subjective norms over recycling, perceived behavioral control over recycling, recycling intention, and recycling behavior) are related. In addition to the TPB variables, additional variables, namely past recycling behavior, convenience for recycling, and moral norms about recycling which may affect recycling intentions were integrated into the study in consideration of the extant literature (Please see Figure 1.1). In this regard, in order to clarify the motives lying behind recycling behaviors of preschool teachers, the following research questions were addressed within the current study:

R. Q.1: What are preschool teachers' levels of attitudes towards recycling, subjective recycling norms, perceived behavioral control over recycling, past recycling behavior, convenience for recycling, moral norms regarding recycling, recycling intentions and current recycling behaviors?

R.Q.2: In what ways each cognitive construct of the TPB (behavioral, normative and control beliefs regarding recycling) associated with their corresponding psychological constructs (attitudes towards recycling, subjective recycling norms, and perceived behavioral control over recycling)?

R.Q.3: How well preschool teachers' recycling intentions be explained by the TPB variables (their attitudes towards recycling, subjective recycling norms, and perceived

behavioral control over recycling) and additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling)?

R.Q.4: How well preschool teachers' recycling behavior be explained by the TPB variables (recycling intentions, perceived behavioral control over recycling), additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling)?

1.3 Proposed Model for the Study

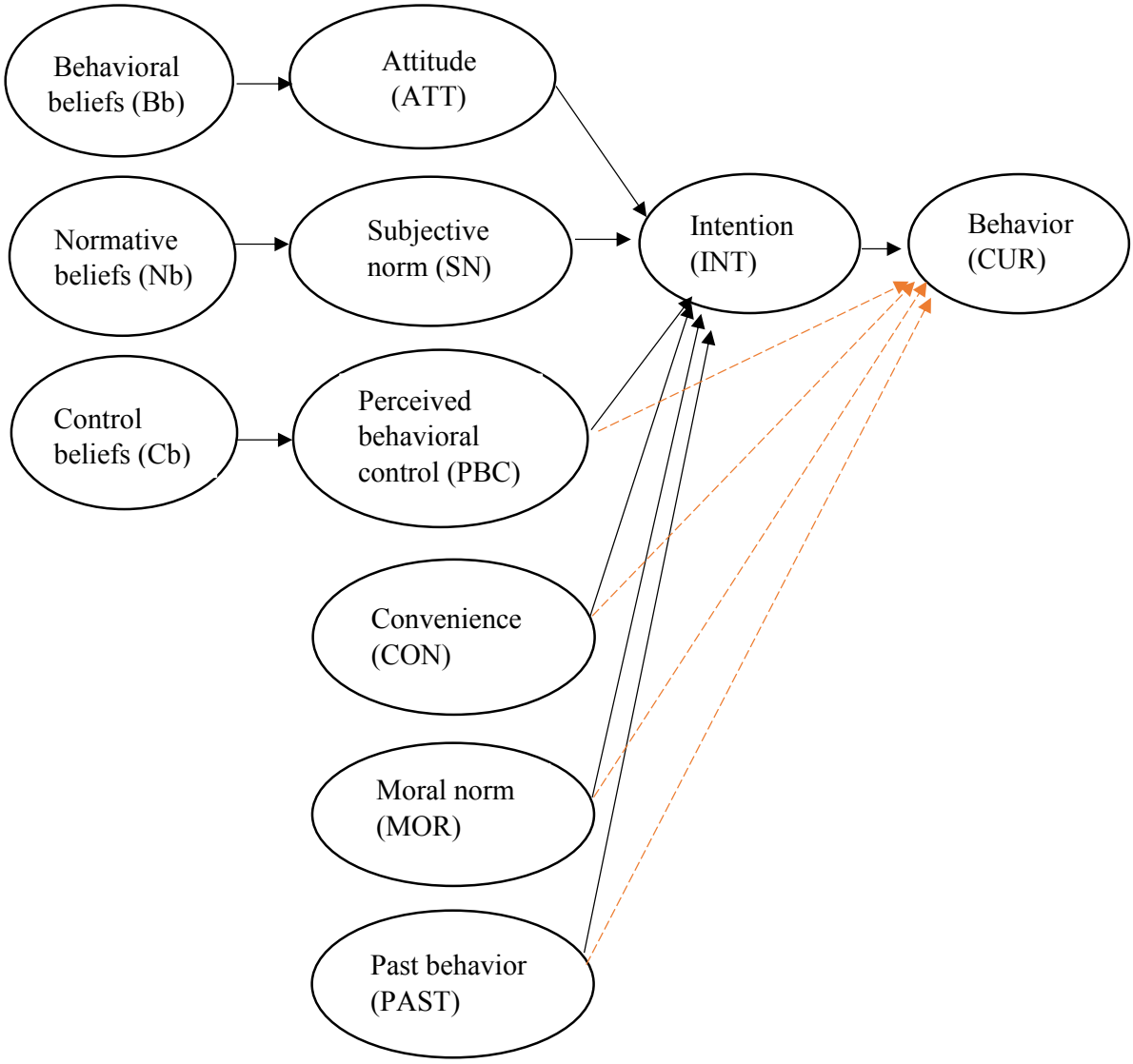


Figure 1. 2 Proposed Model for the Study

1.4 Definitions of Key Terms

Sustainable development: Sustainable development is defined as the ‘‘development that meets the needs of the present without compromising the ability of future generations to meet their needs’’ (WCED, 1987, p.43).

Education for sustainable development: It refers to promote people to construct knowledge, and adopt values and skills in order to engage in decision making processes about not only individual and collective but also local and global ways of performing actions, resulting in the betterment of life now and without harming the planet Earth for the next generations (Sustainable Development Education Panel, 1998).

Early childhood education: Early childhood education is a terms that refers to the planned educational process for young children between the ages of zero to eight with promoting their cognitive, physical, socio-emotional, language, and personal development (Gordon & Browne, 2008).

Waste: Waste is any kind of the material thrown away from houses and commercial facilities and gathered by local administrations (Wright, 2005).

Municipal solid waste: Municipal solid waste is defined as ‘‘a household waste originating from households (i.e. waste generated by the domestic activity of households) and similar waste from small commercial activities, office buildings, institutions such as schools and government buildings, and small businesses that treat or dispose of waste at the same facilities used for municipally collected waste.’’ (OECD, 2013, p.48).

Pro-environmental behavior: It refers to the behaviors which bring about least level of danger to the natural environment, or even look after its wellbeing (Steg & Vlek,

2009). In this study pro-environmental behavior and sustainable behavior (Clayton & Myers, 2009) have been interchangeably.

Recycling: Recycling is defined as the proper way of disintegrating the collected wastes into raw materials to be used to produce new output products, to conserve potentially beneficial resources and to lessen the amount of solid wastes in landfills (EPA, 2013).

Belief: It is defined as a personal idea about things such as an issue, an object, an attribute, an establishment, and about an individual or a group of people (Fishbein & Ajzen, 1975).

Behavioral belief about recycling: Based on the definition of behavioral belief made by Fishbein and Ajzen (1975), behavioral belief about recycling refers to the preschool teachers' beliefs about the consequences of recycling.

Normative belief about recycling: In consideration of the definition of normative belief made by Fishbein and Ajzen (1975), normative belief about recycling refers to the preschool teachers' beliefs about approval or disapproval of significant other people in regard to recycling.

Control belief about recycling: Based on the Ajzen's (1991) definition of control belief, control belief about recycling refers to the preschool teachers' beliefs about the existence of essential parameters for recycling.

Attitude toward recycling: With respect to the definition of attitude made by Fishbein and Ajzen (1975), attitude toward recycling refers to the preschool teachers' positive or negative evaluations of recycling.

Subjective recycling norm: In consideration of the definition of subjective norm made by Ajzen (1991), subjective recycling norm refers to the social pressure perceived by the preschool teachers with respect to recycling.

Perceived behavioral control over recycling: Considering the definition of perceived behavioral control made by Ajzen (1991), perceived behavioral control over recycling refers to ease or difficulty of recycling perceived by the preschool teachers.

Recycling intention: In consideration of the definition of intention made by Ajzen (1998), recycling intention refers to likelihood of recycling evaluated by the preschool teachers.

Convenience: It is the extent to be convenient for engaging in a behavior (Ajzen, 1991). Based on the definition, convenience of recycling refers to the preschool teachers' belief about how much convenient it is for them to recycle (Phillippsen, 2015).

Moral norm: It refers to one's own beliefs and demand for exhibiting a specific behavior (Poskus, 2015).

Past recycling behavior: It is defined in this study as recycling behavior which took place throughout the last year.

CHAPTER 2

LITERATURE REVIEW

The present study scrutinized the motives lying behind recycling intentions and behaviors of preschool teachers by utilizing the extended version theory of planned behavior (TPB) with additional variables such as moral norms, convenience, and past behavior in relation to recycling. In a broad sense, this chapter aimed to provide a comprehensive information regarding the backstage of recycling behavior, the role of preschool teachers in becoming a sustainable society, the TPB, and the previous research investigating recycling in consideration of the TPB. In a narrow sense, on the other hand, this chapter centered upon the following sections: (1) beyond the current situation of the world, (2) sustainable development as a way out waste crisis, (3) the need for education for a sutaianble future, (4) models that explain recycling behaviors, (5) the theory of planned behavior as a theoretical framework and a descendent of the theory of reasoned action, and (6) the theory of planned behavior studies on the context of recycling.

2.1 Beyond the Current Situation of the World

2.1.1 Conceptualization of Waste

Giving a central focus on the concept of waste and considering it with scrupulous attention would be helpful for gaining a clear understanding of to what it actually refers. In that regard, it can be effective to conceptualize waste by concentrating on its definitions existing in the extant literature. Actually, waste has been regarded as a complex and continuously changing concept based on the waste streams and ingredients (Read et al., 1998), and it evokes positive as well as negative feelings or

ideas in addition to how it is defined (Hawkins, 2001). In a broad sense, Bilitewski et al. (1994) explained waste as manageable objects which have been discarded by the holder. Based on the definition, waste can be considered as something thrown away by the possessor to get rid of. In a narrow sense, Lynch (1990) defined waste as something released as a result of production and consumption activities and something not serviceable or purposive for meeting needs of humans. In other words, when the objects arising out of the acts of manufacturing and consuming are thought as incapable to be effectively used by humans in their course of life, those items are regarded by them as waste. Since what might be perceived as serviceable and purposive can show changes from person to person, it can be inferred that what is defined as waste can vary by the perceptions of humans. Furthermore, a material which is regarded as impractical for someone can be a useful object for another person. For these reasons, waste can be considered as a subjective term which has different definitions based on who tends to define it. In addition, waste was defined by Tchobanoglous and Kreith (2002) as an object which the owner does not regard retaining as necessary, while a similar definition was made by Wright (2005) in that waste refers to the objects thrown away from houses and commercial facilities and gathered by local administrations. Hence, although those definitions provided for conceptualizing waste indicate slight differences, it would not be wrong to imply that waste has been seen as an object which could not serve a specific purpose for humans and not respond their wants any longer.

Although waste has been classified in different ways based on such criteria as physical properties, chemical characteristics, and thermal features (Syed, 2006), solid wastes are largely given place in the extant literature. According to Tchobanoglous, Theisen and Eliassen (1977), solid waste refers to the objects resulting from the acts of humans and animals which are solid under normal conditions and are generally abandoned as unadaptable or undesired. Moreover, it includes the abandoned solid materials coming out of residential, industrial, commercial, institutional, construction and demolition,

municipal, process, medical, and agricultural activities (World Bank, 2012). According to World Bank (2012), residential wastes such as food wastes, metal spoons and plastic plates are originated in residential activities. Industrial wastes, on the other hand, arise from institutions such as industries and service areas, and they can be exemplified as materials discarded as a result of construction and destruction activities in these institutions. Furthermore, commercial wastes which refers to materials such as plastic bags, food residues, and mobile phones are resulted from the activities in places like shopping malls and offices, whereas institutional wastes consisting of wastes such as lunch residues, and computers rests upon the activities engaged in such places as schools, and public buildings. Moreover, construction and demolition wastes such as iron and steel are generated in the places like demolition facilities, and building sites, wastes of municipal services such as playgrounds contribute to the generation of wastes such as playground wastes. During production process in places such as electrical installation centers, there exists different types of wastes such as discarded electric wires. Similarly, in the places such as healthcare organizations and hospitals medical wastes such as infectious materials are arisen, whereas agricultural activities which take place in the places such as farmsteads emerge hazardous materials such as pesticides.

Solid wastes which are collected by municipalities and local governments are called as municipal solid waste (MSW), and these wastes include the aforementioned solid waste types (OECD, 2013a). In the relevant literature, there exists several terms which have been interchangeably utilized instead of the MSW (Rathje, 1992). Garbage is one of those concepts, and it points out wet materials, wastes generated in houses such as animals and food residues, and wastes generated in restaurants and other workplaces. Furthermore, trash is also a specific alternative to waste which means dry materials such as jars and magazines (Rathje, 1992). Refuse, on the other hand, is another term utilized substitute for the subject of waste referring to either wet or dry solid wastes generated by the society, and partially solid wastes not processable through waste

water facilities (Rathje, 1992). Although waste has been interchangeably used instead of garbage, trash and refuse, rubbish refers to more comprehensive waste types than the previously mentioned concepts including not only refuse but also bulky demolition and construction wastes (Rathje, 1992). In that respect, it can be inferred that even though the concepts of garbage, trash, refuse, and rubbish have been preferred for years to refer the concept of waste, those terms do not completely stand for what waste means.

2.1.2. Waste as an Increasing Global Crisis

From beginning of humankind the Planet Earth has provided a living space for human beings whose lives are contingent upon the natural resources of the world such as air to breathe, food substances to be nourished, and water supply to meet for water demands. Although the world citizens utilized renewable resources to maintain their lives until about the 18th centuries, they have lied heavy on making the exact opposite choices by using nonrenewable sources of inputs for several centuries. In this way, usage of non-renewable resources paved the way for the industrial revolution which prompted humans to product and consume more without considering the capacity of the world (United Nations [UN], 2015).

Present preferences and practices of human beings play a central role in predestining for succeeding generations by either building a better world or leaving a corrupted one for them (Constrant, Nourry & Seegmuller, 2013). That is, each and every generation holds the chance for providing a quality future for the next generations in their hands by means of their current actions. From a historical perspective, unsustainable behaviors of humans have dragged the Earth into a radical state of flux for several decades, stemming from the industrial revolution (Constrant et al., 2013). As the most critical turning point in the history of the human race, the industrial revolution has ushered in the industrial age during the 18th century (Hobsbawm, 1968; McKendrick, 1982; Mohajan, 2015), even though it dates back to the reform and enlightenment

movements which brought about the radical alterations in the social and political structures of Europe in the late 15th century (Tilly, 1993). In the meantime, human societies including European society as well underwent several interwoven processes of industrialization, globalization, urbanization (Chen et al., 2014), and population (Dancea & Merce, 2009), resulting in waning the linkage between human beings and the natural environment.

Industrialization which refers to process raw materials to obtain end products for responding the consumption needs of humans (Anyanwu, Oyefusi, Oaikhenan & Dimowo, 1997) has been considered as an inseparable part of economic growth and development of both developing and developed countries, since it offered employment opportunities, and boosted the quality of human life (Adeoye 2005; Obioma & Ozughalu 2005). From a different point of view, those nations have been constraint to continuously engage in mass production activities to direct their citizens to consume more and more, and in international trade activities inciting the worldwide competition among countries in order to establish a presence in the economic power struggles among nations (Inglehart, 2000). As a result, industrialization of nations has given rise to devastating reflections on the world ecosystem, and natural resources vandalized because of production activities (Antoci, Galeotti & Sordi, 2018). For instance, coal and iron were utilized as raw materials in the production activities in the industries to fulfill the demands of increasing human population for essential commodities such as food and shelter (Thomson, 1973), bringing forth a further search for those input materials to continue production (Hill, 1969). In other words, humans hinged on consuming the sources of materials provided by the world, and they expected the natural environment to supply more resources for them to produce more later on. Subsequently, the worldwide impacts of industrialization on the powerful nations' economic activities strengthened the global economic bonds and connections among those nations, and made them more dependent on each other (Ateş, 2008). With the reflections of industrialization, all of the world economies were gathered under a single

roof by connecting them to others (Goulet, 2002), and converged on being a ‘‘borderless society’’ (Ohmae, 1990). This process which reorganizes societies and their economies was called as globalization that refers to evolve into a more united world economy (Hill, 2006). That is, economic activities of the nations such as production and consumption exceeded the borders of nations, and grew at higher rates by means of the international flows of goods such as merchandise imports and exports, and sizable investments in those activities. Since each production activity eventuates in the generation of waste which generally refers to ‘‘by-products or end products of the production and consumption process’’ (European Union, 2008), the amount of waste indicated an excessive rise in the world environment depending on the increasing production activities (UN, 2015). Thus, the outstanding nations increased their wealth day by day, and plunged into a rapid search for raw materials (Bresser-Pereira, 2008) so as to maintain their economic prosperity. To exemplify, in order to actualize economic growth and to extend their national wealth, an increasing global rivalry among outstanding nations has erupted an excessive desire for possessing limited amount of natural resources and raw materials such as oil and metals, and for attaining power and gaining control over those resources (Bromley, 2006). In addition, for the sake of their economic profits, a considerable number of nations have concentrated heavily on production to succeed in the international competition, and consumption activities which released unfathomable quantity of wastes to the world environment in parallel with production activities (Aini, Fakhru'l-Razi, Lad & Hashim, 2002).

Besides the negative impacts of economic growth and development through industrialization and globalization, the massive growth of global human population creates danger for the natural resources (Dancea & Merce, 2009). As far as is known, in 1000s there were nearly 300 million people in the world which reached 800 million just before the industrial revolution in the middle of 18th century (Maddison, 2003). Within the following years, population across the world rose to one billion in the early

19th century by means of the contributions of industrialization to mankind by offering improved opportunities to produce more food and to satisfy the growing demands of the increasing population (United Nations Department of Economic Social Affairs, 2011), and this number was about six billion people immediately before the 21st century (Dancea & Merce, 2009; Maddison, 2003). In 2017, on the other hand, the world population was found as 7.6 billion people (United Nations Department of Economic Social Affairs, 2011). As a consequence of the excessive population growth regarded as the major reason for environmental deterioration (Alam, 2010), the global world ecosystem has been seriously eradicated by inappropriate human behaviors (Alam, 2010; Vleg & Steg, 2007). In other words, human-driven factors triggered the environmental problems by influencing all of the world habitants. From this point of view, Hawken et al. (1999) highlighted that one third of the global resource has been consumed between the years of 1965 and 1995.

World Watch Institute (2010) remarked that humans have used more than 50% of the natural wealth of the world only during the past three decades. In fact, the institute put an emphasis on the fact that approximately 60 billion tons of the existing resources on the planet are consumed by the world citizens, demonstrating more than a half rise as compared with the 30 years ago. To specify, the amount of natural resources was quickly diminished by eight times, while mineral ores were consumed 23 times more (World Watch Institute, 2010). UNEP (2011) supported the notion that humans expanded the usage of fossil fuel 12 times more, and the usage of water nine times more in comparison with the previous generations. What is more, The Living Planet Report published by the World Wild Fund for Nature (WWF, 2008) underlined that humans reduplicated their demands for natural resources such as food, fuel, water, and timber as compared with those in the past 45 years. Moreover, the current issue of the same report warned the nations about the fact that in 2012 humans consumed the natural resources which can be satisfied by the 1.6 planets equivalent to the Planet Earth (WWF, 2016). Esposito, Tse and Soufani (2017) took the warning a step further

and put a strong emphasis on the fact that humans will need more than two planets equivalent to the Earth by 2030, and three planets equivalent to the Earth by 2050 in order to satisfy their needs, if their current consumption patterns continue at the current rate.

As another example, the severity of the current consumption level of humans was laid bare in a report published by Organization for Economic Co-operation and Development (OECD, 2013) in that the demands of humans for metal as a virgin material doubled between the years of 1980 and 2008, and for raw materials for construction increased by 50% in the same time interval. As a result of the amount of the consumption activities of humans, each year approximately 12 billion tons of virgin materials pulled out of the environment around the world (OECD, 2013). Hence, it can be inferred that humans put too much pressure on the planet which has limited resources and capability to satisfy the needs of humans. Concordantly, an overpressure has been exerted on the natural environment by the vast quantity of waste discharged to it because of their immoderate level of mass consumption (Gerbens-Leenes, Nonhebel & Krol, 2010). To put it in a different way, the unsustainable pattern of humans' consumption releasing a large quantity of waste posed a great risk for the world's natural wealth. On this basis, waste issue has been regarded as one of the most vexing problems which the humanity has encountered (Hou, Al-Tavvaa, Guthrie & Watanabe, 2012). For these reasons, instead of considering waste problem as a local issue, it has been recognized by the authorities as a transnational issue and started to be discussed on a global scale (Singh, Laurenti, Sinha & Frostell, 2014). Based on the amount of consumption in which humans have played the main role, it can be implied that they have been using the resource capacity of the next generations for several decades, and it is possible for humanity to confront with the drawbacks of their current activities. When it is taken into account that each type of consumption and production activity ineluctably generates waste (Karishnamurti & Naidu, 2003; Moraru, Babut & Cioca, 2010) in accordance with the worldwide impacts of industrialization,

globalization, and population, the urbanization level throughout the world is another factor contributing to the global waste generation (World Bank, 2012). Urbanization which has been defined as the rise of population distribution in urban areas is considered as an indivisible part of the industrialization process (Fan, 2017; Henderson et al., 2009). In other words, urbanization is brought to agenda when the industrial growth as well as economic development take place in the world societies. In addition to give cause for distribution of the population over cities and countries, it also brings about alterations in the way of making production, in the ways of humans' lives, and in the characteristics of the natural environment in particular areas (Zhu, 2005).

According to Ochoa et al. (2018), high level of urbanization is directly related to several crucial problems such as environmental devastation, climate change, and social inequalities. In terms of waste problem, on the other hand, urbanization has a great potential to trigger the aforementioned problems by augmenting an excessive amount of waste generation (Karishnamurti & Naidu, 2003; Medina, 2002). For instance, as countries undergo the process of urbanization which is strongly linked to economic growth, the amount of paper and plastic waste generated in those countries ascend immoderately (World Bank, 2012). Moreover, considering the fact that more than half of the world population (about 54%) lives in urban areas in 2014 (UN, 2014), it is not surprising to expect those areas make more contributions to waste generation as compared with rural areas. According to Clark and Matharu (2013), municipal solid waste which is a specific type of waste referring to the wastes generated as a result of domestic, commercial, and institutional processes by recovering or discarding for the use of municipalities and local governments (OECD, 2013), generated each year rose to 1.3 billion metric tons which is foreseen to reach 2.2 billion metric tons until 2025. In other words, municipal solid waste which is currently produced by 3 billion urban dwellers in the amount of 1.2 kg/capita/day is expected to be generated by 4.3 billion urban dwellers in the amount of 1.42 kg/capita/day until 2025 (World Bank, 2012). On the other hand, OECD countries in which two-third of their human population

agglomerated in urban areas (OECD, 2013) accounted for almost half of the total amount of solid waste generated throughout the world in a year by generating 572 million tons of solid wastes (World Bank, 2012) on an average of approximately 2.2 kg waste per person in a day. Moreover, this number will probably reach much higher quantities by 2050 when human population in urban areas is expected to rise 66% of the world population (UN, 2014).

In consideration of the current consumption levels and waste generation tendencies of humans in the modern world have brought about the world's society they live in to be transformed from a ''make, do, and mend society'' into a ''throw-away society'' (Lave et al., 1999). On this basis, it may bring the question to mind, what kind of a penalty would be paid for the unsustainable consumption patterns of the citizens of the contemporary world?

WWF (2014) warned humanity that humans living in today's world have a more tendency to lessen the amount of forests faster than they grow, spring into actions of fishery more than the marines' ability to renew, release more carbon into the Earth's atmosphere more than the forests' and marines' ability to absorb tolerate, culminating in the exhaustion of global resources and in excessive generation of waste. The reason for the unfortunate statement was considered as in relation with the fact that the natural environment has been substantially under the pressure of the growing and urbanizing human population as well as the advanced life standards (Agamathu et al., 2009), resulting in an immense volume of waste to be discarded, ecosystem of the Planet Earth to be demolished, and environmental pollution to be triggered (World Watch Institute, 2010).

Scientific community has met on a common ground that here has been a considerable rise in the solid waste generation for several decades (Agamathu et al., 2009; Wilson et al., 2012). Considering the unsustainable consumption patterns of humans, for

example, 43 kilograms of materials are recently used by each European habitant in each day (Giljum & Polzin, 2009), with an average 16 tons of resources per person in each year of which almost half of them are extracted as waste (Eurostat, 2016). According to Alan and Ahmade (2013), increasing amoung of solid wastes can give rise to crucial environmental problems through reactions of substances with other substances, as well as ability of ingredients to produce poison and easily explode (Alam & Ahmade, 2013). This means that solid wastes extracted to the environment have an undeniable potential to pose great threats for the natural environment by means of the substances they include, reactions of those substances with one another, toxic contents of the substances, and danger of explosion in waste dumps. Bogner et al. (2008) indicated that solid wastes produce a considerable amount of greenhouse gas (GHG), which is the main driver of global climate change that refers to an inevitable rise in the temperature of the atmosphere (Calabrò, 2009). In this respect, Platt and Lombardi (2008) asserted that GHG is mainly caused by the landfills in which wastes are stored, and those places are anticipated to contribute to the global production of GHG by releasing the atmospheric methane gas by 5.2%. More specifically, landfills including MSW undertake the emission of half of the methane gas released to the Earth's atmosphere (IPCC, 2007).

Wastes which present hazardous ingredients such as heavy metals, toxins, and acidic liquids and penetrate them into water resources and air through pollution have been considered as a vital threat for the world life (Hutchinson, 2008). To illustrate, a great number of plastic wastes are thrown out of oceans in every year (Gregory, 2009), and 4.8 to 12.7 million tons of those plastics enter oceans in each year (Jambeck, Geyer & Wilcox, 2015). Thus, it can be inferred that this large number of wastes can pollute the underwater, and even pose possible dangers for the underwater ecosystem. Furthermore, about 18 million tons of plastics which are equivalent to 10% of the plastics generated worldwide enter seas annually (Velis, 2014). In other words, although each year seas are more subjected to pollution of wastes by comparison with

the oceans, it is a crystal-clear fact that the water resources of the world have been under an attack of human-induced wastes. As a result of those wastes entered into underwater, more than 267 species have ingested those plastics which includes toxic ingredients or impeded by them (Gregory, 2009). For this reason, wastes are important factors to be considered for the umpteenth times due to their lasting influences on the living beings due to the fact that not only the underwater habitat but also living creatures living on the land can be threatened by the negative and permanent effects of plastic wastes.

Wastes had been regarded by authorities as a problem to be gotten rid of rather than a resource to be processed for many years (European Union [EU], 2017). In that respect, almost half a billion tons of wastes generated in European countries was sent to landfill or incinerated in corresponding facilities (Eurostat, 2016). Moreover, Hoornweg and Bhada-Tata (2012) laid stress on the fact that 41% of the wastes generated in the developing countries are collected by municipalities, and approximately 133.82 million tons of wastes were burnt through the incineration process. In other words, most of the wastes in the developing countries were not collected and engaged in a useful process. On the other hand, in terms of MSW, those countries which are about to develop have generated wastes with a high concentration of organic particles by 50% to 80%, pointing out a powerful potential to be used as a resource in the global economy (Asian Development Bank, 2011; World Bank, 2012). Hence, it can be said that altering wastes into resources is considered as an important attempt to make wastes a part of the worldwide economy. In line with this notion, Cremiato et al. (2018) approached wastes as an indivisible part of economy. The necessity of engagement of wastes in economy has been called as circular economy which promotes the value of wastes kept in the economic activities (European Union, 2017). In fact, evolving into a circular economy is expected to diminish the amount of consumption of new objects by up to 32 percent in the upcoming 15 year-period and much more than 50 percent until 2050 (Esposito et al., 2017).

Impacts of wastes are not limited with the environment and economy in that wastes contain risks for the society, as well (UNEP, 2015). According to UNDP (1998), one fifth of the wealthiest people living in the developed nations accounted for 86% of the amount of the global consumption, while one fifth of the poorest people consumed only 1.3% of the world's resources. Therefore, there is a social inequality in terms of the consumption levels of the haves and the have-nots, leading the richest people or countries to generate more waste as compared with the poorest ones. Unfortunately, those wastes globally released have brought about several drawbacks for the poor inhabitants whose houses are located to a close area to the waste facilities (Porter, 2002). In this respect, Carr (1996) conducted a study which indicated that low-income dwellers are settled nearest to waste facilities in consideration of the low-cost expense of those residences, although authorities do not establish these facilities closer to the poor neighborhoods. That is, people with low socio-economic level have a more tendency to be negatively impacted by the consequences of wastes on human heath than the people with higher socio-economic level, since they live in closer neighborhoods to waste facilities.

From a different point of view, people living in those neighborhoods have a significant threat of getting infected because of the animals living closer to waste facilities or in dump sites (Al-Delaimy, Larsen & Pezzoli, 2014). That is to say that human health is under the threat of wastes dumped closer to living spaces. Additionally, because of wastes, humans confront the danger of contacting severe and contagious sickness including the polluted residuals and chemicals such as malaria, cholera, dysentery, respiratory complications and injuries among others (Cabral, 2010; Ladu et al., 2011). For instance, people who are engaged in informal waste picking activities for generating an economic income are most probable targets of the aforementioned sicknesses because of not only direct contact with hazardous substances included in those wastes (Needhidasan, Samuel & Chidambaram, 2014) but also the absence of protective clothes provided for them (Giusti, 2009).

As earlier mentioned, not only human beings but also other living beings on the Earth has experienced the environmental, social and health, and economic influences of excessive waste generation on their survival for several decades. As municipal solid wastes have increased in the environment because of the current actions of the throw-away society, its members have suffered from the impacts of their endless demands from the wealth of the world, resulting in the depletion of the natural resources (McCollough, 2010). Hence, it would not be improper to state that the world is currently more tender than the past decades, since its resources have been extinguished by the unsustainable behaviors of human beings for many years, influencing directly its inhabitants as well. Although all human beings have been experiencing the negative outcomes of the current status of the world in any way, young children as the most delicate members of human beings have been the center issue of concern for a long while (Hofferth & Curtin, 2005). In other words, the youngest generation of this age has paid the penalty for the consequences of the older generations' unsustainable decisions and actions. Recent evidences provided by Alam and Ahmade (2013) indicated that preschool children are among a few privileged groups of people that should be prioritized due to severe influences of solid wastes, in addition to dwellers settling closer to improper waste facilities and landfills, workers working in the waste facilities, and animals walking around those facilities. In this respect, today's children are face with the impacts of the devastated world ecosystem caused by the growing number of people populated in the urban areas rather than rural areas, the demolished open spaces, green spaces and natural habitats (Elliot, 2010), and the natural areas contaminated by wastes. For these reasons, children are currently exposed to a considerable number of drawbacks as compared with their counterparts in the past in terms of spending time in the natural environment (Clements, 2004; Louv, 2005) by engaging in such outdoor activities as climbing trees and playing outdoor environments (Brown & Kasser, 2005, Hofferth & Curtin, 2005). For example, children living in the industrialized countries spend a great deal of time indoors in

comparison with the children were in the past (MacKerron & Mourato, 2013). In other words, they have been deprived of the opportunity of connecting with the natural world which was explained by Keeler (2008) as "a great friend and teacher to young children". Moreover, the current disadvantaged situation of young children has been called as ''nature deficit disorder'', negatively influencing the young generation as well as the society (Louv, 2005). All these facts provide evidences demonstrating that young children, who are the mirrors which reflect how the future of a society is likely to be, have been feeling the impacts of unsustainable conditions of the contemporary world.

2.2. Sustainable Development as a Way out of Waste Crisis

During the 20th century, it had been considered that ''development'' and ''conservation'' were disparate issues on account of the fact that conservation was regarded as the preservation of the natural resources, and development was regarded as the demolition of those resources through production and consumption activities (Paxton, 1993). However, through the end of the 20th century, a report published by the Club of Rome and called as the Limits to Growth had a broad repercussion in all over the world. In this report, a group of people consisting of prominent scientists and economy experts alerted humanity to the finite resource capacity of the Planet Earth and the mounting demolition of its resources which could be ended in a deadlock (Meadows, Meadows, Randers & Behrens, 1972). Herein, Meadows (1972) stated that the capacity of the world for supplying the demands of people could be incapable within the upcoming 100 years, if the current way of industrialization, population, production, and consumption activities continue to rise as in the present time. Subsequently, it was emphasized that this situation could be ended up with an immediate and ungovernable decrease in population as well as industrial capacities (Meadows, 1972). In light of such warnings for the society, this report was considered as a significant source underlining the undeniable importance of the present time in taking firm steps toward being a sustainable society (Kenny, 1994). As a result, the

term of sustainable development arose from the perceived discrepancy between development and conservation as a promising concept unifying these two issues (Du Pisani, 2006).

Sustainable development was defined by Allen (1980) as the development which fulfil the demands of humans and enhance their standard of living at the same time. However, the most widely known definition of sustainable development was provided in a report of the World Commission on Environment and Development ([WCED], 1987) called as ‘‘Brundtland Report’’ or ‘‘Our Common Future’’, presented by the United Nations General Assembly. In this report, sustainable development was defined as the development which satisfies the demands of the recent generation by paying regard to those of succeeding generations to satisfy their own needs (WCED, 1987). According to Agyeman (2004), one of the most substantial features attributed to Brundtland Report was the ‘futurity principle’ which puts an emphasis on the demands of the next generations within the scope of today’s moral aspect. In pursuit of this aim, in the report it was highlighted that sustainable development consists of three interwoven aspects including economy, environment, and society which should be considered by authorities together as the essence of future actions to achieve sustainable development (WCED, 1987). Economical dimension of sustainable development is a monetary approach to resources in a way that it has positive impacts on human life and the environment, whereas environmental dimension of sustainable development refers to the conservation of natural ecosystems and biological diversity included in these systems (Öhman, 2011). On the other hand, social principle of sustainable development is related to adopting a democracy-based approach to achieve sustainable development (Öhman, 2011). Although these three principles are strongly interrelated by pointing out the direct link among lifestyles of humans, the natural environment and communities (Pramling-Samuelsson, 2011), WCED (1987) placed a specific emphasis on that the environment cannot be considered as an area independent from human actions, urges, and demands, because of the permanent devastating

impacts of economic development on the natural wealth of the planet. Herein, in order to boost the positive interaction between not only natural resources and human activities but also economic development and the environment, WCED (1987) underscored the importance of education which is inevitable for raising knowledgeable individuals with desired behaviors.

In addition to the importance of education, it was elucidated that immediate actions towards sustainable development which necessitate to alter current habits and behaviors towards the environment must be taken in regional, national and international arenas (WCED, 1987). In pursuit of this aim, it was emphasized that appropriate forms of behaviors such as sustainable usage and management of the world's resources play a pivotal role in adopting a sustainable lifestyle (WCED, 1987). Since people are considered as the primary reason for the current situation of the planet (Millenium Ecosystem Assessment, 2005; UNEP, 2015; World Bank, 2012; WWF, 2008, 2014), and unsustainable consumption has been regarded as one of the most prominent reasons for unsustainable living of the humanity (Barr et al. 2011), those irresponsible behaviors of humans ought to be changed immediately (Oskamp, 2000) in order for the present generation to take advantages of the wealth of the planet and leave a sustained planet to the future generations (Bonnes & Bonaiuto, 2002). In this respect, current consumption behaviors of people should be changed through encouraging people to engage in pro-environmental behaviors or sustainable behaviors (Clayton & Myers, 2009), which bring about least level of danger to the natural environment, or even look after its wellbeing (Steg & Vlek, 2009), for the sake of the Earth and its inhabitants (Sanne, 2002; Shove 2010). For instance, WCED (1987) emphasized that pollution which is mainly resulted from wastes has adverse influences on the life of living beings, on wellbeing of people living in cities, on national and international economies, and on jobs, due to dumping sites located closer to rivers which pollute water used for different purposes such as drinking, washing, and cooking. In this respect, waste management including activities such as waste

recycling was considered in this report as a critical strategy to deal with the global waste problems (WCED, 1987).

Within the following years, the United Nations Conference on the Environment and Development ([UNCED, 1992), widely known as the ‘‘Rio Summit’’ or the ‘‘Earth Summit’’, was arranged in 1992. As a result of the conference, two official outputs were released to the public, namely ‘‘Rio Declaration on Environment and Development’’, and ‘‘Agenda 21’’. The former presented fundamental principles for building a fair and cross-national cooperation, preserving the unity of the natural environment and systems, and discerning the essential nature of the planet (UNCED, 1992). In other words, this declaration concentrated on several strategies to be taken into account for the necessity of a collaborative partnership for noticing and conserving the world’s wealth. The latter, on the other hand, was a call for springing into action toward sustainable development in order to provide comprehensive information regarding basis for actions, objectives, and activities on the subjects of social and economic dimensions of sustainable development, resource protection and management for sustainable development, the role of important groups of people, and means of implementation (UNCED, 1992). Especially Chapter 21 of the Agenda 21 gave wide coverage to the importance of decreasing and managing wastes, and changing current consumption patterns of people in order to protect the natural resources of the planet (UNCED, 1992). For instance, in the Chapter 21, it was stated that environmentally friendly waste management strategies should be utilized by nations, and the main reason lying behind waste generation should be targeted to alter the unsustainable ways of production as well as consumption behaviors of people which give cause for an ever-growing amounts of wastes (UNCED, 1992). In this respect, as a waste management strategy, it was recommended that recycling be prioritized by governments in a national scale, and public education and awareness be a part of the further action of recycling (UNCED, 1992). That is to say that, governments as well as the other members of public ought to share the all

responsibility which is necessary for overcoming waste generation and removing its traces on the environment, economy, and social life by taking an active role in recycling activities.

2.2.1. Recycling as A Waste Management Strategy

While coping with global environmental problems influencing unsustainable social and economic situations, waste management has been proposed as an activity which promises the environmental conservation by means of reducing the amount of wastes (Izvercian & Ivascu, 2015), and creating quality products through reusing, recycling, and recovering (Europian Environmental Agency [EEA], 2002). In fact, waste management which provides safe and essential opportunities such as water, shelter, and food for the world's inhabitants can be considered as a basic need of humans or a basic right for them to live in sustainable conditions (UNEP, 2015).

According to a great deal of research and reports, the essential ideas behind waste management are diminishing the adverse effects of waste on the world ecosystem as well as on the humankind, treating wastes in a safe and an appropriate way (UNEP, 2011), preventing natural resource depletion (Coelho et al. 2012), providing green jobs for humans, promoting life standards of humans, and reducing global greenhouse gas emission (UNEP, 2015). It is to say that a proper waste management can contribute to become a sustainable society by behaving for the benefit of the planet's natural wealth, as proposed by WCED (1987) in that severe globally environmental drawbacks are minimized in order to preserve the continuity of ecosystem and to promote its integrity. In this regard, all nations should abandon the common idea by canalizing themselves to resource rather than waste, and engage in waste management rather than waste disposal, and concentrate on circular economy rather than linear economy based on waste management (UNEP, 2015). Worrell (2014) specified five waste management strategies, namely ''reduce'' referring to engage in product design to impede waste generation, ''reuse'' fostering the reutilization of goods, ''recycle'' aiming to reutilize

specific materials included in products, ‘‘recover energy’’ referring to obtain energy from the incineration of wastes in facilities, and ‘‘disposal’’ referring to sanitary landfilling. However, among these strategies, recycling has been regarded as a crucial approach to diminish the volume of waste which will be landfilled, therefore, the factors hinder and promote recycling behavior have arisen attention of a considerable number of researchers for years (e.g. Boldero, 1995; Nixon & Saphores, 2009).

Although there are a number of pro-environmental behaviors such as environmental management, preservation of natural environment, sustainable design, energy conservation, reusing, and recycling in order to protect and ameliorate the world ecosystem (Grimmer & Bingham, 2013; Hopper & Nielsen, 1991), a great deal of researchers urged on the fact that negative impacts of human-induced global problems on the environment can be curbed by recycling (Chaisamrej, 2006; Gadiraju, 2016; Poskus, 2015). In a broad sense, recycling has been defined by EPA (2008) as the process of reverting a second hand product to a new product, however in a narrow sense it has been defined by as utilizing resources expiring as a basic material for producing new goods (Selke, 1990), or as the act of reprocessing the extricated and superannuated products in order to reintegrate them into production process (Worrell & Reuter, 2014). It can be inferred that a common point in each definition is that recycling is directly linked to the procedures of reprocessing and remanufacturing which differentiate recycling from reuse (Tucci et al., 2006).

In order to take an active stance to waste recycling, it can be useful for individuals to have general information regarding recycling activity. In this regard, Leidner (1981) explained two components of recycling hierarchy, namely primary and secondary recycling. The former includes recycled materials in the recycling process so as to manufacture the same or resembling products (Leidner, 1981). This type of recycling can be exemplifies as utilizing cardboard boxes to manufacture a cardboard box. On the other hand, the latter includes recycled materials in the recycling process so as to

manufacture new goods which have less quality as compared with its earliest version (Leidner, 1981). It can be exemplified as using wasted glass particles to produce glazed ceramic tiles for bathroom floor. In consideration of the two types of recycling hierarchies, primary recycling is of more value than secondary recycling activity (Leidner, 1981).

In addition to recycling hierarchy, it can be beneficial for the interested people to have information about in which stages recycling actualizes. According to EPA (2008), recycling is composed of three stages including collection and operation of recyclable materials, production of new goods by using those products, and buying the manufactured products. In this respect, Worrell & Reuter (2014) highlighted the types of materials which can be undergone recycling process, namely plastics, papers, lumber, glass, textile, industrial by-products, construction and demolition wastes, and metals such as aluminum, rare metals, copper, lead, and zinc.

Recycling each recyclable materials can make enormous contributions to human life. To specify, recycling has a great potential to decrease environmental pollution (Engelman, 2005; Moorman et al., 2007). For instance, recycling and composting activities hindered 86.9 million tons of resources from being sanitary landfilled, resulting in preventing the emission of 183 million metric tons of carbon dioxide by the atmosphere (EPA, 2010). Moreover, paper recycling causes for 35% less water pollution as compared with producing paper by using raw materials, whereas glass recycling prevents the environment from being polluted about 50% (Blatt, 2005). That is, recycling inhibits an increase in pollution which may have an impact on not only the environment but also its living members. Since most of the air pollutants are same with the gases triggering global warming (Moorman et al., 2007), recycling promotes the health and survival of living beings against the influences of pollution on themselves, as well. Furthermore, metal recycling utilizes a small amount of water and brought about less pollution in the natural environment (Hill, 1977). In other words,

recycling provides opportunities for not only decreasing the environmental pollution but also depleting resources unnecessarily. In this way, recycling can save the resources from being subjected to be overly consumed by humans, and it can enhance the life conditions of the world's inhabitants. As another example, when a ton of aluminum undergoes recycling, this process saves approximately 7500 liters of gasoline (EPA, 2006). All of these examples indicate that natural resources of the world can be prevented and sustained through recycling in line with the enhancement of the lives of living beings.

In addition to the contributions of recycling to the preservation of the natural environment as well as to the society, recycling provides a great number of advantages in economic activities by creating opportunities for investing, and creating new jobs for individuals (Van Beukering, Kuik & Oosterhuis, 2014). In that respect, UNEP (2011) highlighted that categorizing and processing materials which can be recycled provide ten times more job opportunities for individuals as compared to sanitary landfilling as well as incineration of wastes (UNEP 2011). In this way, recycling can support not only the economy of the nations which engage in the corresponding activity but also the quality of humans' life living in those nations. According to Acherman (1997), on the other hand, recycling provides nations with saving money as well. For example, EPA (2009) highlighted that approximately 40% of energy is conserved while recycling paper rather than generating a new form of paper pulp. Moreover, EPA (2000) underlined that while recycling steel materials, 60% less energy is utilized as compared to the amount of energy used to generate steel by means of virgin materials. That is to say that recycling can provide economic opportunities by utilizing less amount of energy during the process, environmental opportunities by consuming a lower number of raw materials, and social opportunities by protecting the rights of future generations on those raw materials. In consideration of the aforementioned benefits of recycling, Renbi and Sutanto (2002) put a specific

emphasis on the fact that recycling can be considered as the most favorably received sort of solid waste management strategy and as its integral part.

2.2.2. Recycling in Turkey

Municipal solid waste management has been regarded as one of the most critical issues in Turkey, because of the global impacts of industrialization and urbanization (Ak, 2015). With regard to waste management, wastes have been collected discretely, conducted interim storage, recovered, recycled, and disposed to sanitary landfills in Turkey (Republic of Turkey Ministry of Science, Industry and Technology, 2014). Among those waste management strategies, the history of recovery and recycling of solid wastes, especially for glass and paper materials, in order to manage wastes in industrial levels hinges upon the mid-20th century (Banar et al., 2001; Neyim, Metin & Eröztürk & 2001). Thanks to the investments which have been made in recycling on an industrial scale in Turkey for the elapsed time, a wide range of plastic, paper, glass, and metal materials have become recyclable in the facilities (Metin, Eröztürk & Neyim, 2003).

According to Metin et al. (2003), an average of 0.95 kilograms of municipal solid waste were daily generated in Turkey with 0.6 kilograms per person in each day. On the other hand, in 2014 about 25 million tons of wastes were generated by households, 1.2 million tons of wastes were generated as a result of industrial activities, and over half a ton of e-waste was generated in Turkey (Yetim, 2014). In this respect, with a particular attention to urbanization which is one of the most radical changes the world has undergone and which is resulted in the substantial amount of municipal solid wastes (World Bank, 2012), it can be implied that the impacts of urbanization have influenced Turkey, as well. According to a report published by World Bank (2012), 1.72 kilograms of municipal solid wastes were daily generated by each person in the urban areas in which about 50 million people live. What is more, it is anticipated by

the authorities that 68 million people which will live in urban areas will be generating approximately 2 kilograms per capita by 2025 (World Bank, 2012).

In 2013 the Ministry of Development publicized the Tenth Development Plan of Turkey which bestowed significant attention to the engagement of wastes into the national economy (Ministry of Development, 2013). According to the evidences provided by the Ministry of Science, Industry and Technology (2014) in the General directorate of industry national recycling strategy document and action plan indicated that the nature of the half of wastes which were generated in Turkey was recyclable, and the economic value of those wastes annually generated was approximately 1.5 billion TL. Alongside the national calls for the reform on the subject of waste management, the Waste Management Symposium Final Declaration prepared by the Ministry of Environment and Urbanization (2017) recapitulated the necessity of transforming the currently linear economy into a circular economy in order to turn the generated wastes into an advantage for the sake of Turkey. According to EUROSTAT (2017), municipal solid wastes were generated ranging from the average of 0.49 kg/capita/day to 2.16 kg/capita/day in European countries, and 28% of those wastes collected by the municipalities were recycled in 2014. On the other hand, even though 27 million tons of municipal solid wastes were collected by municipalities among a total amount of 31 million tons of wastes, only 15% of those wastes were involved in recycling process (Ministry of Environment and Urbanization, 2017). In other words, Turkey has lagged behind in adopting recycling as a waste management strategy as compared to the average recycling value of Europe. Furthermore, one can infer that have not totally adopted by people living in Turkey, based on the aforementioned evidences.

Although ways of waste management such as recycling have been regarded as a responsibility of governmental agencies, a number of international report strongly emphasized that these strategies require an active public participation, and education

is the most effective way to engage people in those actions (e.g. WCED, 1987; UNCED, 1992).

2.3. The Need for Education for a Sustainable Future

Hereinbefore, the unsustainable behaviors of humans have deteriorated the world's ecosystem and leaded to deplete its resources, resulting in significant problems (Palmer, 1998) such as global waste generation. In other words, the unsustainable activities of humans have damaged the relationship between them and the environment for a long time. Along with the notation, Suzuki and McConnel (1997) enunciated that ''We can only rediscover our human connections with the earth if we begin with our children's education" (p. 23). That is, education can remove the traces of humans on the planet and approximate the humans to the environment. Similarly, Palmer (1998) stated that education can be a key strategy to ameliorate the unsustainable status of the world and to make the world a more sustainable place for all living beings by targeting the human-induced problems influencing the planet. In this regard, education has been considered as a necessity for becoming a sustainable society, since provides individuals with an understanding of the interrelation between the wellbeing of human kind and economic growth and development by adopting a point of view based on cultural, political, and environmental issues (Siraj-Blatchford, Smith & Pramling-Samuelsson, 2010). In this way, it acts as a basis for building a better society has a significant role in equipping individuals with the appropriate behaviors to move the society one step further (Keating, 1998). Thus, education has been seen as an important element which should be integrated into the steps taken toward having a sustainable future (UNESCO, 2005). On this basis, several reports have taken an active stance to create incentives regarding the significance of education in the actualization of sustainable development in a global scale.

In the Brundtland Report it was emphasized that education is an effective way of raising generations with necessary skills, capability, creativity, productivity, ability,

desired behaviors to cope with the global problems (WCED, 1987). For this reason, the international authorities recommended that education be provided for each individual to achieve sustainable development by having a better understanding of the relationship between the natural environment and humans (WCED, 1987). In this regard, it was concentrated in the report that they have a crucial role in raising young generations being aware of the interrelationship between the environmental and developmental principles (WCED, 1987). In addition, the Brundtland Report placed a specific emphasis on teachers' attitudes because of its importance to enhance their understanding of the natural environment and its relationship with development (WCED, 1987).

Chapter 36 of the Agenda 21, namely Education, Training and Public Awareness put a quite specific focus on the role of education in having a sustainable future (UNCED, 1992). To specify, the unquestionable roles of education in gaining the desired attitudes, behaviors, values, and skills were strongly emphasized so as to heighten the awareness of young children, older children, and adults toward the sustainable practices as well as to express their duties on these issues (UNCED, 1992). In other words, it can be inferred that education is an irreplaceable as well as integral part of transforming into a sustainable society in which sustainable practices are performed by conscious individuals. In this regard, Cutter-Mackenzie (2009) stated that:

> Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues. It is critical for achieving environmental and ethical awareness, values and attitudes, skills and behavior consistent with sustainable development and for effective public participation in decision-making. (p.44)

In addition to the Brundtland Report in which critical role of teachers in making societal changes was emphasized (WCED, 1987), and the Earth Summit in which the role of education in providing environmental sustainability was widely discussed

(UNCED, 1992), in Thessaloniki Declaration (UNESCO, 1997a) it was stressed that education ought to be of paramount importance for a sustainable future in both regional, national and international arenas, and it should be a pillar of sustainable development. Since humans are an indivisible part of the planet (Freire, 2005), when someone exploits the wealth of the planet, the reflections and results of his/her actions are felt by inhabitants of the Earth in both national and international scales (Galeano, 2011). In this respect, education is needed to be considered in order for people to have a clear understanding of the inevitable inter-relationship between their actions and influences of those actions on the Earth (Galeano, 2011). Concordantly, UNESCO (1997b) reported that education should be at the center of the upcoming actions and strategies to be adopted for achieving sustainable development (UNESCO, 1997b). According to UNESCO (1997b), education lays the groundwork for shaping a sustainable world through making desired alterations in attitudes, values, behaviors and lifestyles, raising generations which have awareness towards the environment and which have necessary knowledge of the ways of protecting and proceeding natural resources, and strengthening the bond between humans and the environment in order to become a sustainable world. In this way, the bond between education and sustainable development became stronger, and a new term emerged to refer this relationship, education for sustainable development. Herein, education for sustainable development (ESD) points out encouraging people to construct knowledge, and gaining values and skills so as to actively take part in decision making processes individually and collectively in local and global settings, bringing forth the betterment of life and a continuous protection of the planet Earth for the next generations (Sustainable Development Education Panel, 1998). The relationship between education and sustainable development has been addressed by several researchers in terms of three-interwoven approaches, namely education *about, in* and *for* environment (Deans & Brown, 2008; Lee & Ma, 2006, Maynard, 2007). Hedefalk, Almqvist and Östman (2015) clarified these terms in that education *about* the environment refers to knowledge of the way that natural systems work such as the

process of growing plants, whereas education *in* the environment underlines first-hand experiences in the natural environment. On the other hand, education *for* the environment underscores actively taking part in the solution of vexed environmental problems or making sustainable preferences for the sake of social equity. Irrespective of the differences in the subject of ESD, it hinges upon the belief that education plays a pivotal role in adopting beliefs and performing practices regarding sustainability for the sake of wellbeing of future and present generations (Davis, 2008) by integrating principles, objectives and behaviors regarding SD into all levels of education and by giving place for each of its pillars (Salonen & Tast, 2013). In that respect, in Thessaloniki Declaration (UNESCO, 1997a) basic education which covers the education of pre-school and primary school-age children was strongly emphasized as the foundation of the succeeding educational levels so as to alter and ameliorate the irresponsible behaviors of individuals, and to instill them with appropriate behaviors necessary for sustainable development. In other words, early childhood education provided children in the earlier years of life can be regarded as a good start for getting into action toward the global sustainability targets.

2.3.1. The Need for Early Childhood Education for Sustainable Development

2.3.1.1. The Power of Early Ages as a Fresh Start for Sustainable Development

From the moment they are born into the world which has been encountering global problems caused by the unsustainable life styles of their antecedents, young children unfortunately have experienced the consequences of those actions (Stuhckme, 2012). For this reason, even though they have a basic right to sustain their lives in safe and prosperous conditions as each and every person on the planet deserves, the youngest generation becomes the most vulnerable members of the humankind witnessing the severe impacts of unsustainable life styles adopted by the older generations (Davis, 2008). Unavoidably, global sustainability issues leached into their lives, as well (Davis, 2010).

In the early 21st century, attempts of several researchers brought to the mind a question: Could young children be part of the solution for global problems? In this regard, Bennett (2002) and Davis (2010) powerfully advocated that the youngest generation has a great capacity to take a firm step toward a sustainable life. Align with the notion, Osano and Corcoran (2009) regarded sustainability as a global target which requires engagement and dedication of every citizen. This means that as a part of society, young children should be participated in endeavors toward sustainable development, as well. Chawla (2007) agreed with the idea that each individual including a young child has a critical importance in achieving sustainable development. Subsequently, Davis et al. (2008) published the Gothenburg Recommendation on Education for Sustainable Development which is an international attempt to promote and spread education for sustainability by means of general and specific recommendations for early childhood education, schools and teacher training organizations, higher education as well as informal and non-formal education levels. Furthermore, UNESCO (2005) publicized the United Nations Decade of Education for Sustainable Development (2005-2014) which lays the groundwork for early childhood education for sustainable development. According to Kaga (2007), the idea lying behind early childhood education for sustainable development is to educate and promote children in order for them to adopt necessary skills and behaviors contributing to sustainable development. At this point, early childhood education, which includes planned educational flow for children between the ages up to eight in order to pave the way for their cognitive, physical, socio-emotional, language, and personal development (Gordon & Browne, 2008), has been valued as ‘‘a natural starting point’’ for the education for sustainable development (Davis et al., 2008).

Early years of life have given birth to the utmost and wide-ranging developments in the lives of humans, therefore this period of life is regarded as the basis for the following years of life (Davis, 2009). For instance, it was emphasized that early childhood period has a significant role in brain and cognitive development of children

(Wolfe & Brandt, 1998). In this regard, a great deal of researchers highlighted that young children have the capacity to learn complex subjects regarding sustainable development through their complex thinking skills (Boutte, 2008; Kahriman-Ozturk, Olgan, & Guler, 2012; Pramling Samuelsson, 2011). Similarly, Reunamo (2007) stated that children have the potential to produce more creative solutions for the problems they encounter, when they make interpretations and analysis based on those interpretations on their own. Concordantly, children at an early age are regarded as capable individuals who have the ability of how to think, what to be, what to know, and how to act as well as how to communicate with the environment and people living in the world (Pramling-Samuelsson, 2011; Pramling-Samuelsson & Kaga, 2008). In this respect, Mckeown (2013) put an emphasis on the roles of young children in education for sustainable development in that they ought to be regarded as individuals who are in need of learning necessary knowledge, important skills, favorable attitudes, and beliefs about having a sustainable future. Within this scope, in consideration of the potential of young children, education for sustainable development aims to involve them in global issues such as social justice and problems regarding the natural environment in order for them to gain a wide perspective which is necessary for coping with the global problems (Otieno, 2007; Scheunpflug & Asbrand, 2006).

Moreover, early years of life are considered as a critical period for young children to adopt desired and permanent attitudes and behaviors (Kaga, 2007). To illustrate, it was highlighted that foundations of pro-environmental behaviors such as recycling are laid in this period (Davis & Gibson, 2006). In fact, studies indicated that experiences in the natural environment in early childhood years is important for fostering pro-environmental attitudes which may lead to perform pro-environmental behaviors in the later life (Cheng & Monroe, 2010; Collado et al., 2015; Otto & Pensini, 2017; Thompson, Aspinall & Montarzino, 2008; Wells & Lekies, 2006). To specify, Wells and Lekies (2006) examined the relationship between nature experiences of American people during childhood and their present attitudes and behaviors toward the natural

environment. As a result of their study, engaging in wild natural experiences such as camping and in domestic nature activities such as gardening at an early age were found associated with their present pro-environmental attitudes as well as behaviors. In other words, individuals who have experiences in the natural environment during their childhood have a more tendency to adopt pro-environmental attitudes which may impact their pro-environmental behaviors in adulthood. Based on the results, Wells and Lekies (2006) concluded that activities which individuals engage in the natural environment up to 11 years-old are correlated with the adoption of favorable pro-environmental attitudes. From a different perspective, Taylor (2011) stated that moral insights of humans regarding how they behave the living beings are related to their attitudes toward the natural environment adopted throughout the early ages. In line with the notion, Lohr and Person-Mims (2005) detected a significant correlation between natural experiences such as gardening which individuals engaged during childhood and attitudes of adults toward natural beings such as trees. What is more, researchers underlined that attitudes held toward the environment develops in the early years of life, and altering those attitudes becomes difficult with age (Gifford & Sussman, 2012). For these reasons, kindergartens where children are instilled by preschool teachers with the aforementioned necessary features have been seen as educational platforms which make more contributions for them to be equipped individuals in order to achieve sustainable development as compared with a number of colleges, since kindergartens are the places where children engage in learning activities by living, and in discovering boundaries (Wals, 2006).

2.3.1.2. Preschool Teachers as Change Agents for a Sustainable Future

As an initial point of formal educational levels, early childhood education which is provided in the early years of life are of paramount importance for young children to underpin the development of basic skills, attitudes, behaviors, and habits (Pramling-Samuelsson & Kaga, 2008) as well as to engage in sustainable development practices (Pramling-Samuelsson, 2011). In pursuit of these aims, preschool teachers have been

considered as an integral part of the formal educational environments with their unprecedented roles in the developments of children (Hanushek, Rivkin & Kain, 2005; Wals 2006). More specifically, they play a key role in introducing the subject of education for sustainability to young children, and guide them to construct their own knowledge through their practices and ways of teaching (Pressoir, 2008). In addition, Elliot and Davis (2009) underlined that preschool teachers enhance young children's learning of sustainability subjects as well as provide them opportunities with engaging in the corresponding learning experiences. Throughout the processes, they act as role models for children who encourage them to be active citizens participating in sustainable development actions (Vining & Ebreo, 1992), and as agents of change who have the necessary power for making radical alterations (Beckford, 2008; Havelock & Zlotolow, 1995).

According to Mckeown (2013), children need to gain necessary knowledge, skills, attitudes, and beliefs about becoming a sustainable world. In this regard, preschool teachers who function as sources and agents of alteration have a critical place in instilling young children with those features (Pajares, 1992). In fact, they represent their conceptual schemes and practical inferences through their behaviors which are shaped by what they believe, what they assume as well as what their standard of judgments are (Pajares, 1992; Richardson, 1996; Stevenson, 2007; Wilcox-Herzog, 2002). With a specific focus on their belief system, Spodek (1988) stated that teachers' beliefs are determining factors for their classroom behaviors and practices. In a similar way, Fang (1996) underscored that beliefs of teachers regarding a person, a material, or a subject affect the ways of their educational plans, communication with others, and judgments. At this point, Maier, Greenfield and Bulotsky-Shearer (2013) touched on that not only beliefs but also attitudes of preschool teachers which have an impact on their teaching experiences are important elements of early childhood education.
According to Salonen and Tast (2013), beliefs, attitudes, and values of preschool teachers are consciously or subconsciously transmitted to young children through their

behaviors. That is, preschool teachers may not be aware of which messages are received by young children while they are performing a behavior. However, children can be aware of the messages lying behind the behaviors of teachers about sustainability as well as internalize those messages (Kaga, 2008), because they are more likely to internalize and perform behaviors when they directly and perpetually observe the important people for them such as their teachers (Higgs & McMillan, 2006).

For these reasons, considering the determinants of preschool teachers' education for sustainability practices such as recycling can offer an insight to have a clear understanding of the main factors lying behind their corresponding practices. In pursuit of this aim, in the following section, models that explain recycling behaviors are illustrated.

2.4. Models that Explain Recycling Behavior

Up to this point in time, several theories have been used in order to examine behaviors of individuals in different areas. Among those theories, the Norm Activation Model (Schwartz, 1970), the Health Belief Model (Janz & Becker, 1984), the Value-Belief-Norm Model (Stern, Dietz, Abel, Guagnano & Kalof, 1999), the Theory of Reasoned Action ([TRA], Ajzen & Fishbein, 1975), and the Theory of Reasoned Action the Theory of Planned Behavior ([TPB], Ajzen & Fishbein, 1991) which is the extended version of the TRA have been utilized to explain recycling behaviors. However, except from the most widely used theories of TRA and TPB in recycling studies, other theories were rarely preferred in identifying the factors lying behind individuals' recycling behaviors (see Chan & Bishop, 2013; Poskus, 2015; Taylor & Todd, 1995; Tekkaya et al., 2011; Tonglet et al., 2004; Valle et al., 2005). In the following section, a brief information regarding each theory is presented.

2.4.1. Norm Activation Model

Norm activation model was developed by Schwartz (1970) in order to investigate personal, and social norms as well as the impacts of those norms on prosocial behaviors such as pro-environmental behaviors (Schwartz and Howard 1980). Main focus of the theory is related to the concerns of individuals about the other members of the society, therefore this theory takes its roots in altruistic behaviors (Schwartz, 1973). According to the theory, when encountering a particular situation, the first thing an individual intends to do is to consider the corresponding social norms regarding the situation which refer to the norms adopted by a society or a group of significant people (Schwartz, 1977). Since social norms do not have enough triggering power for an individual to engage in a behavior, these norms are transformed into personal norms which are held by individuals based on the influences of social norms adopted in a specific group of people on individuals in that they encourage individuals to perform a behavior because of their characteristics based on the self of individuals (Hopper & Nielsen 1991; Schwartz, 1977). In this respect, personal norms of individuals work in a parallel way with two critical ingredients of the theory: (1) awareness of consequences which refers to the individuals' states of being conscious about the possible results of a behavior, and (2) ascription of responsibility which refers to their states of assuming a responsibility on the issue (Schwartz, 1977). If these two circumstances are satisfied by individuals, behaviors of those individuals on the specific issue will be in line with their personal norms as well as social norms (Hopper and Nielsen 1991). Norm activation theory of Schwartz is presented in the visualization, as can be seen in Figure 2.1.

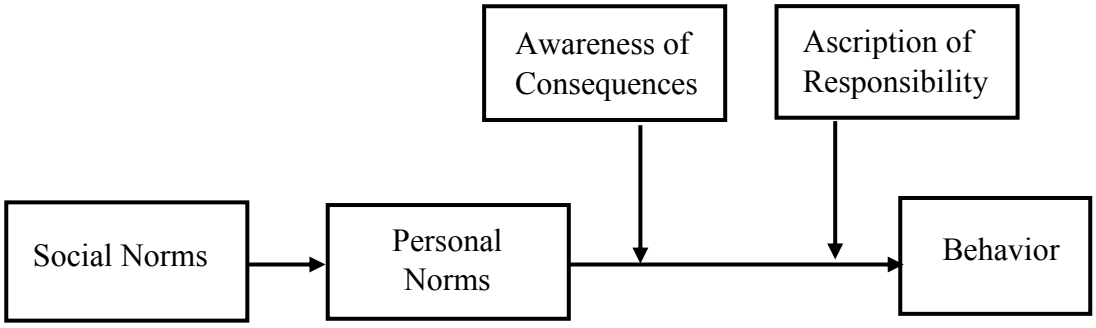


Figure 2. 1 Norm Activation Model of Schwartz (Hopper & Nielsen, 1991)

In the extant literature, there exists a number of research in which motivator factors lying behind pro-environmental behaviors were investigated by utilizing Schwartz's norm activation theory as a theoretical framework (e.g. Davies, Foxall, & Palister, 2002; Hopper & Nielsen 1991; Stern, Dietz, & Kalof, 1993; Vining &Ebreo, 1992). With regard to recycling as an altruistic behavior, for example, Vining and Ebreo (1992) investigated the household recycling behaviors of the participants in the city of Champaign in the United States by using Schwartz's norm activation model in order to test the usefulness of the theory in the explanation of recycling behaviors, and results of their study indicated that personal norms of the participants had an impact on their recycling behaviors with the moderator role of their awareness of consequences regarding household recycling. Concordantly, Hopper and Nielsen (1991) investigated the determinant factors of block leaders' recycling behaviors in Denver, Colorado by utilizing Schwartz's norm activation model as a theoretical basis for their study, and they found that personal norms as well as social norms contributed to the explanation of their recycling behaviors, as proposed by the corresponding theory (Hopper &Nielsen, 1991).

2.4.2. Health Belief Model

Health belief model was developed by Janz and Becker (1984) in order to identify the factors determining health behaviors. Although the major components of the model included the personal value attributed to a specific goal, and the appraisal of an individual based on the likelihood of attaining the corresponding goal (Janz & Becker, 1984), the revised version of the model includes several variables, namely (1) perceived susceptibility which is the extent of individuals feel themselves sensitive against health risks, (2) perceived severity which refers to individual judgments of individuals about the potential seriousness of the threat, (3) perceived benefits which refer to the beliefs of individuals regarding the efficiency of a particular behavior to diminish the risk of the relevant problem, and (4) perceived barriers which refer to the beliefs of individuals regarding whether they can cope with the unfavorable consequences of the specific behavior. On this basis, Abraham and Sheeran (2005) highlighted that the aforementioned variables are separated into two groups which are perceived threat as well as behavioral evaluation.

In addition to the four variables, Rosenstock (1966) recommended that cue to action variable which refers to the situations, individuals, or any circumstance encouraging individuals to perform a particular behavior be integrated into the model in order to prompt individuals to the corresponding behaviors. Moreover, self-efficacy which refers to the beliefs of individuals regarding how much they are able to exhibit a specific behavior (Bandura, 1977) was integrated into the model by Rosenstock et al. (1988). The integration of self-efficacy into the model means that if an individual considers that a behavior is practical to engage (perceived benefit), but s/he does not regard herself/himself as a capable person to exhibit the corresponding behavior (low self-efficacy), s/he may not engage in the behavior. The relationships between the variables included in the health belief model are presented in Figure 2.2.

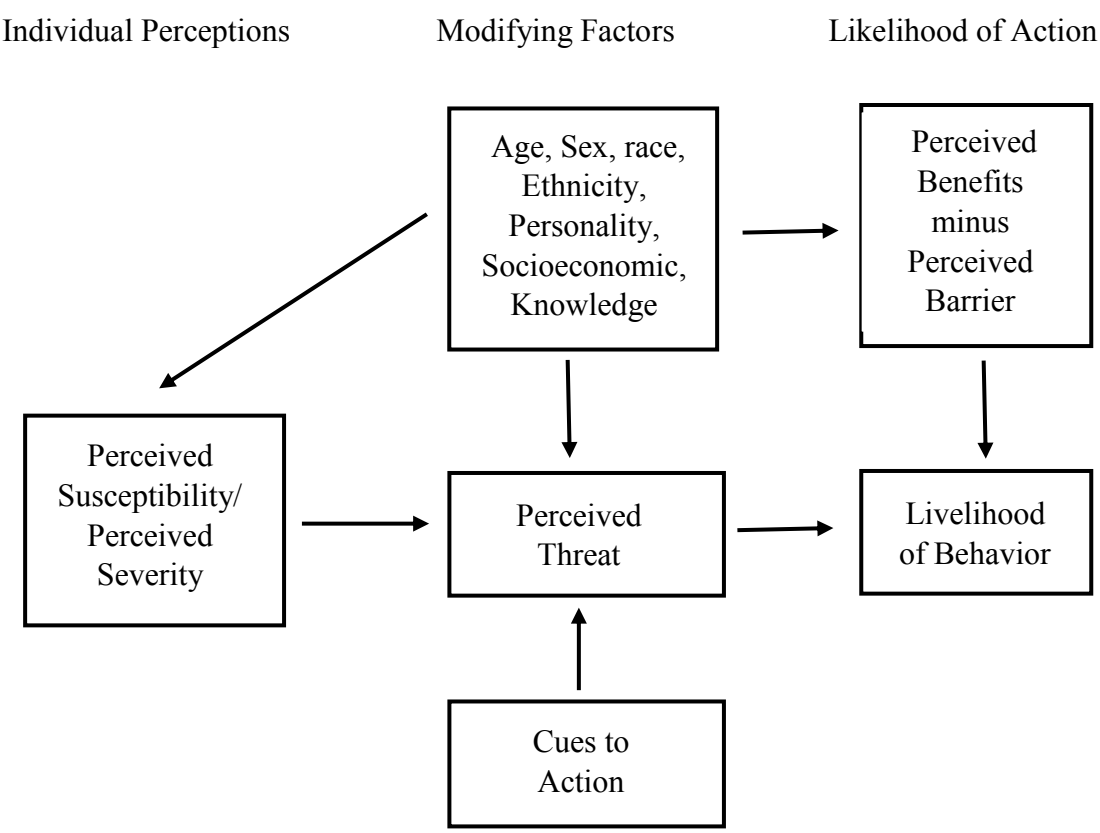


Figure 2. 2 Heath Belief Model (Stretcher & Rosenstock, 1997)

Health belief model has been most widely utilized in the health research (e.g. Deshpande et al., 2009; Kharrazi, 2009; Umeh & Rogan-Gibson, 2001). However, it has been recommended being used to examine environmental behaviors such as recycling as well (e.g. Lindsay & Strathman, 1997). In their study, Lindsay and Strathman (1997) investigated recycling behaviors of residents in Missouri, and they found that not only the basic version of the health belief model but also its extended version contributed to the explanation of recycling behaviors of the participants, resulting in a supporting evidence for the heath research in which the current theory was used. On the other hand, the health belief theory has been subjected to criticism for a long time, because of its inadequacy in comprehending a possible causal link between the constructs (Zimmerman, 2005).

2.4.3. Value-Belief-Norm Model

Value-Belief-Norm was developed by Stern, Dietz, Abel, Guagnano, and Kalof (1999) in order to investigate the determinants of behaviors such as pro-environmental behaviors. In the theory there exists several variables with causal relationships: (1) biospheric values which refer to beliefs and attitudes advocating the uniqueness of the natural environment (Stern, 2000), (2) egoistic values which refer to self-centered beliefs (Stern et al., 1999), (3) altruistic values which are related to the unity of the world ecosystem (Stern, 2000), (4) ecologic perspectives of individuals which provide a general framework about the wide-ranging beliefs about the natural environment and the influences of human behaviors (Stern et al., 1999), (5) adverse consequences of events which refer to the risks caused by humans interaction with the environment on the valued materials (Stern et al., 1999), (6) ascription of responsibility which refers to the ability perceived by individuals to decrease the possible risk of the event (Steg et al., 2005), (7) personal norms which are related to the moral obligation felt by individuals to perform a behavior (Stern, 2000), and (8) environmental behaviors (Stern, 2000)**.** The relationships between the variables included in the value-belief-norm model are presented in Figure 2.3.

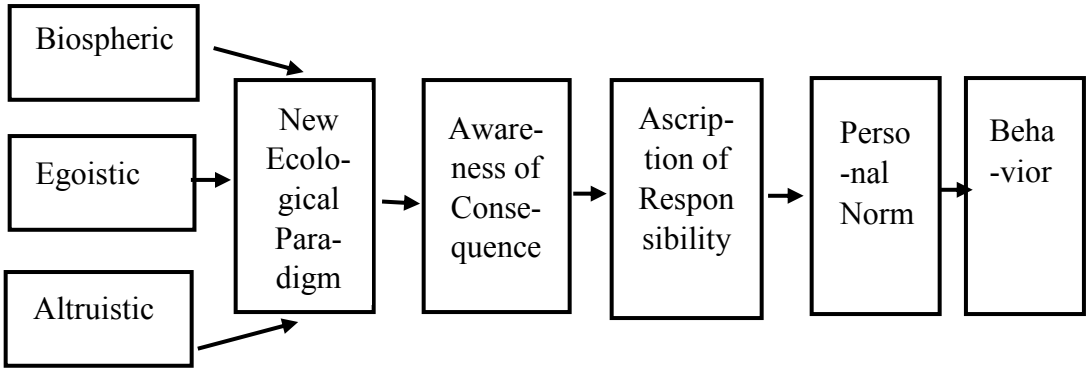


Figure 2. 3 Value-belief-norm model (Stern et al., 1999)

Herein, the current theory has been utilized by different researchers in a number of research in order to examine pro-environmental behaviors (e.g. Stern, 1999; Steg et al., 2005). One of the environmental behaviors which was investigated by means of

the value-belief-norm theory is recycling. For instance, Aguilar-Luzón, Monteoliva and Garcia (2005) investigated the glass recycling behavior of 275 university students, and they found that the participants' glass recycling behaviors were explained better by the variables of personal norms and altruistic values of them.

2.4.4. The Theory of Reasoned Action: As a Successor of the Theory of Planned Behavior

In the field of social psychology, the subject of attitude has been attracted a great deal of attention with regard to its role in accounting for human behaviors (Ajzen & Fishbein 1980). In order to clarify the link between attitude and behavior, several researchers have proposed frameworks which were formed to obtain evidences about the corresponding link for decades. Through the mid-20th century it was realized that attitude had a multicomponent structure (Ajzen & Fishbein, 1980). On this basis, as a theoretical guide, the theory of reasoned action (TRA) in which attitude was accepted as a complex content comprised of personal beliefs of an individual about a reality, his/her feelings toward the reality, and action tendencies in consideration of the reality (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) was introduced by Fishbein (1967), modified, and improved within the following years (Ajzen & Fishbein, 1980).

According Fishbein and Ajzen (1975), beliefs function as the cornerstones of the TRA which form a cognitive foundation for an individual's attitudes, intentions, and behaviors, therefore, individuals as logical thinkers process and utilize information to make a judgment, carry out an evaluation, and decide upon a certain issue. On this basis, the major assumption lying behind the theory is that people take into account the possible implications of their behaviors before exhibiting a behavior (Ajzen & Fishbein, 1980). Within the scope, the TRA aims to investigate how beliefs about a specific behavior, attitudes toward performing the behavior, and intention to engage in the behavior determine the corresponding behavior under the willpower of an individual (Fishbein & Ajzen, 1975). For this reason, they recommended that

intentions of an individual to exhibit a behavior lead him/her to engage in the given behavior (Fishbein & Ajzen, 1975). The visual model of the TRA with its unique components is demonstrated in Figure 2.4.

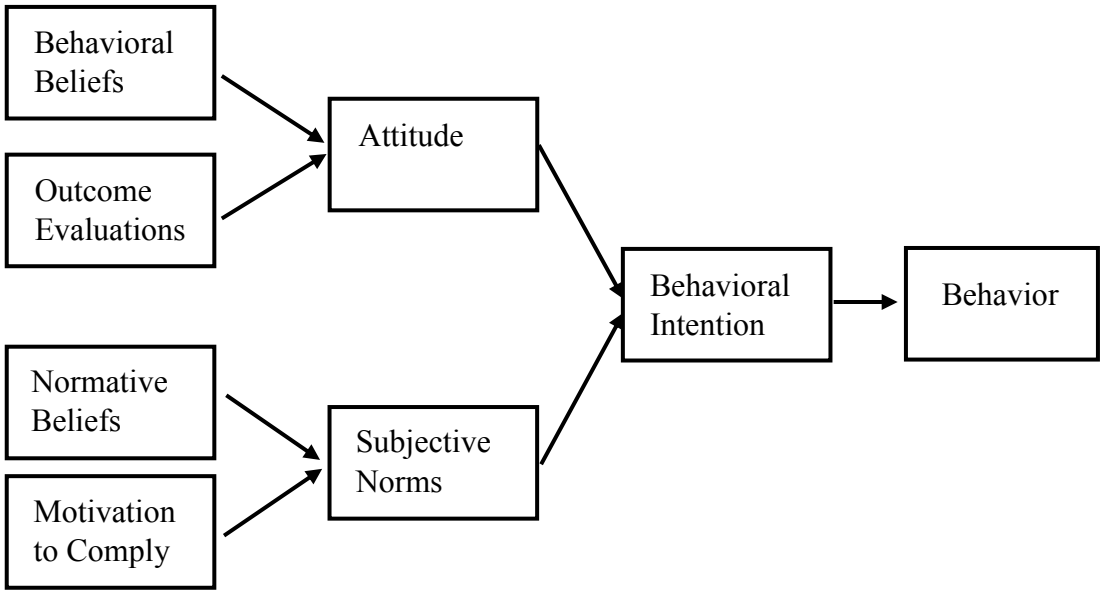


Figure 2. 4 The visual model of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980)

According to the Ajzen and Fishbein (1980), behavioral beliefs which are an individual's beliefs regarding the advantages and disadvantages of a specific behavior form the cognitive basis of his/her attitudes. These beliefs consist of two important ingredients: outcome evaluations which are associated with the way individuals evaluate the potential consequences pertaining to act a behavior, and the corresponding beliefs' strength based upon the extent of each salient outcome individuals evaluate in relation with the given behavior. At this point, attitudes which are shaped in accordance with behavioral beliefs were defined by Ajzen and Fishbein (1980) as the positive or negative evaluations of a behavior.

Normative beliefs which refer to an individual's beliefs about what the society or a group of significant others such as colleagues and parents think about whether s/he ought to engage in a particular behavior, or not. The normative beliefs are composed of motivation to comply with beliefs of an individual about a behavior, and these beliefs are the cognitive foundations of subjective norms which are the individual perceptions about social pressure about performing a behavior (Ajzen & Fishbein, 1980). In this respect, if signficant people for an individual think that a certain behavior should be exhibited, s/he will tend to exhibit that behavior.

In addition to attitude toward a behavior and subjective norms about the behavior, behavioral intention is another unique construct of the TRA. Fishbein and Ajzen (1975) posited that an individual's behavior is mainly determined by his/her intentions to perform the related behavior. The TRA assumes that intentions of humans direct them to act voluntarily, and intentions toward a behavior are the direct and immediate antecedent of a certain behavior (Ajzen, 1975). In other words, behavioral intention is considered as the strongest predictor of a specific behavior. According to Ajzen and Fishbein (1980), behavioral intention refers to the motivation of an individual to tend to perform a specific behavior under volitional control, and it is determined by his/her attitudes toward the behavior as well as the social norms perceived by him/her in regard to engage in the behavior (Ajzen and Fishbein 1980). Moreover, behavior refers to the behavior an individual performs (Ajzen & Fishbein, 1980). On this basis, it can be concluded that the more an individual intend to perform a behavior, the more s/he engage in the specific behavior. To exemplify, in consideration of the TRA, one can infer that if an individual thinks that engaging in a recycling behavior has several advantages, and the significant people for him/her think that recycling should be performed in everyday life, s/he has a more tendency to engage in recycling behavior, the most probably engage in recycling in daily life.

Since the essence of the TRA lies in the behaviors under a volitional control, the theory has been revised to develop its predictive power by taking into account behaviors which are not under volitional control. Herein, Ajzen (1985) put a strong emphasis on the fact that intention may not be the immediate determinant of behaviors in those behaviors are not under volitional control. In this way, the Theory of Planned Behavior has been developed by Ajzen (1985) as a theoretical framework, which is explicated in a detailed way in the next section.

2.5. The Theory of Planned Behavior as a Theoretical Framework: A Descendent of the Theory of Reasoned Action

As previously mentioned, the main motivation lying behind the revision of the TRA is to strengthen its predictive power on behavioral intention and behavior in case of explaining a behavior under non-volitional control over the particular behavior Ajzen (1985). As a result, as a succeeding form of the TRA (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), the TPB has been theorized as a conceptual basis for scientific research which lends empirical supports for researchers with explaining a behavior and behavioral change (Ajzen, 2001). In addition to the components of the TRA, another component and its salient beliefs were integrated into the theory, namely perceived behavioral control, and control beliefs respectively. Ajzen (1991) defined PBC as individual perception regarding the extent of easiness or difficulty of a behavior to be performed. In other words, individuals make an internal evaluation about whether how much they are able to exhibit a behavior depending on the difficulty or easiness level of the behavior. Perceived behavioral control is comprised of two elements: control beliefs which refers to the existence of facilitator or hindered circumstances to engage in a behavior, and power of control which refers to factors promoting or limiting the exhibition of the corresponding behavior (Ajzen & Driver, 1991). Ajzen (1991) posited that it has a mediator role in the impacts of control beliefs. What is more, PBC has a direct impact on behavioral intention, and a moderates the

impacts of intention and behavior (Ajzen, 1991). The visual model of theory of planned behavior is presented Figure 2.5.

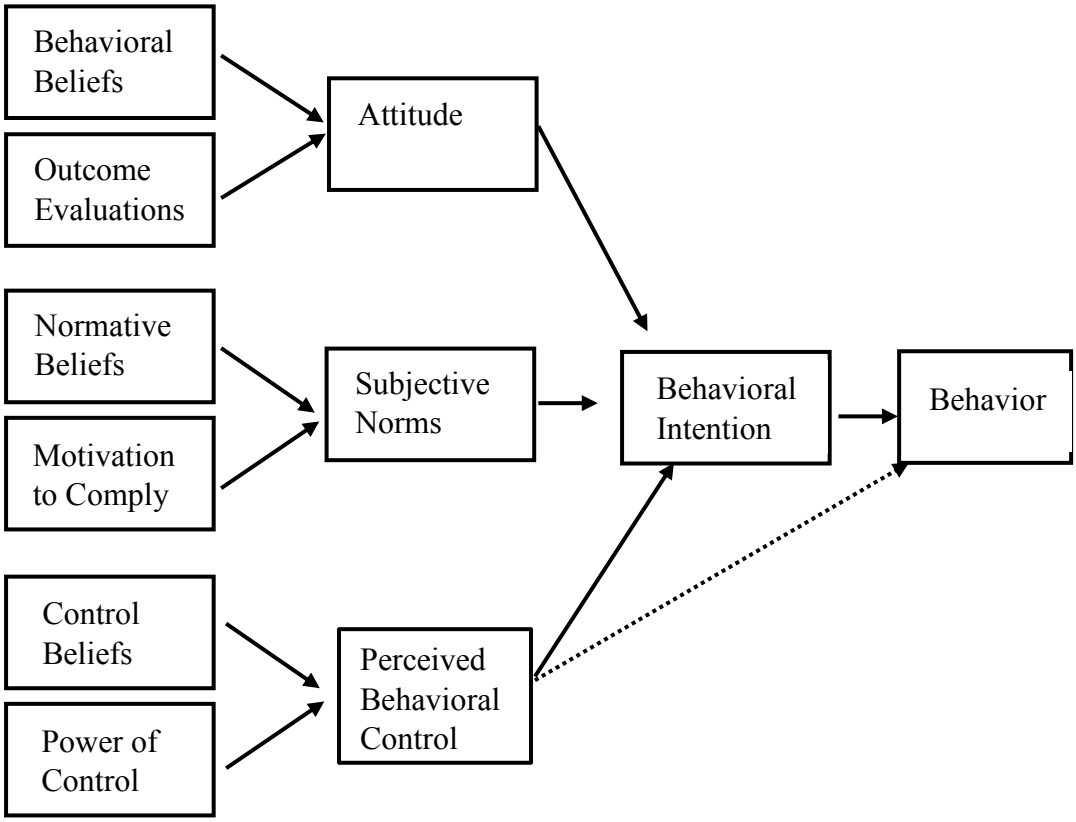


Figure 2. 5 The Theory of Planned Behavior (Ajzen, 2005)

Hereinbefore, each psychological construct of the theory is determined by a corresponding salient belief. With respect to the theory, attitude toward a behavior is influenced by behavioral beliefs which are the perceived advantages and disadvantages about performing a behavior, and evaluation of possible outcomes (Ajzen & Fishbein, 1980). Since each of the behavioral beliefs (b) is directly related to a corresponding evaluation of outcome (e), each belief strength and the relevant evaluation of outcome are multiplied and in order to obtain a value about the extent of attitude toward a behavior (ATT). Afterwards, the obtained values are summed for each item (i) (Ajzen, 2005, p.124), as indicated in the following equation:

$$ATT = \Sigma b_i e_i$$

In consideration of the theory, subjective norms are determined by normative beliefs which is the perceived social constraint about whether an individual should act or not act in a certain way, and motivation to comply with this belief (Ajzen & Fishbein, 1980). According to the theory, an individual will intend more to act in a certain way by taking into consideration whether significant others approve or disapprove the performance of the behavior. Since each normative belief is directly connected to a corresponding individual motivation of comply with the specific belief, each strength of normative belief (n) is multiplied with the relevant motivation to comply (m) with the corresponding belief (Ajzen, 1988). Then, each of the resulting products obtained from each item (i) is summed to calculate the necessary value for subjective norms about the certain behavior (SN), as presented in the following equation:

$$SN = \Sigma n_i m_i$$

Perceived behavioral control is under the influence of control beliefs which refers to the existence of factors which can facilitate or hinder the performance of a behavior (Ajzen, 1991). Since each of the control beliefs (c) is directly related to a corresponding power of control (p), each strength of control beliefs is multiplied with the relevant power of control over the behavior in order to calculate the value about perceived behavioral control (PBC). Then, each obtained value for each item (i) is summed (Ajzen, 1991), as shown in the following equation:

$$PBC = \Sigma c_i p_i$$

Although the TPB has been acknowledged as a pertinent conceptual framework through a considerable number of scientific research (Godin & Kok, 1996) such as meta-analytic evidences based on the predictive power of a wide range of behaviors

(Armitage & Conner, 2001), a number of researchers discussed enhancing the predictive power of the theory, and recommended integrating additional variables into the TPB (Conner & Armitage, 1998). Furthermore, Ajzen (1991) underlined that the TPB is open to be extended by means of significant constructs which contributed to the explanation of variable in behavioral intention or the given behavior. Herein, previous research (e.g. Conner & Armitage, 1998; Pakpour et al., 2014; Philippsen, 2015; Poskus, 2015; Rivis, Sheeran & Armitage, 2009; Wan et al., 2012) took the notion of Ajzen (1991) a step further in light of the scientific supports for the integration of additional variables in to the theory such as past behavior/habit, and moral/personal norms. In consideration of that, additional constructs (moral norms, convenience, and past behavior) which were included in several research as predictor variables and successfully determined the recycling behaviors of the targeted individuals were integrated into the TPB model proposed for the current study so as to enhance the predictive power of the model.

2.5.1. Integration of Moral Norms

Some researchers discussed that the inadequacy of subjective norms to predict behavioral intention, resulting in removal of the construct from the studies (e.g. Sparks, Shepherd, Wieringa & Zimmerman, 1995). For this reason, more other research underlined the need for additional normative components and recommended including moral norms in the TPB model to explain the particular behavior (e.g. Ajzen, 1991; Armitage & Conner, 2001; Beck & Ajzen, 1991; Conner & Armitage, 1998; Thogersen & Noblet, 2012). Concordantly, in the context of recycling, a number of researchers has argued that subjective norms regarding recycling did not predict recycling behavior (e.g. Boldero, 1995; Taylor & Todd, 1995; Terry et al., 1999; Tonglet et al., 2004) or slightly explained recycling behavior (e.g. Chu & Chiu, 2003); therefore, some of the researchers advocated the inclusion of moral norms as a predictor variable of intention to recycle into the TPB model to explain specific behavior (Chen & Tung, 2010, Conner & Armitage, 1998; Tonglet et al., 2004;). In

addition, Klockner et al. (2013) highlighted that since moral norms indicate a high correlation with several TPB constructs such as attitude; therefore, some of the researchers replaced moral norms with attitude, illustrating a significant correlation with not only intention to recycle but also recycling behavior (e.g. Chan & Bishop, 2013; Pakpour et al., 2014; Poskus, 2015). Moreover, several other recycling studies in which the construct of moral norms was mediated through attitude predicted intention to recycle significantly (e.g. Botetzagias et al., 2015). Within this scope, using moral norms into the TPB model might increase the predictive power of the model. Hence, in the current study, moral norms were utilized to determine the factors lying behind recycling behaviors of preschool teachers. In other words, in addition to what significant others for preschool teachers think whether they ought to perform recycling behavior or not, their own beliefs about engaging in recycling behavior were incorporated into the study by means of the construct of moral norms in order to explain recycling intentions and behaviors of preschool teachers.

2.5.2. Integration of Convenience

In addition to the integration of moral norms into the model, the construct of convenience was included in the TPB model about recycling behaviors of preschool teachers, as well. Convenience has been considered as one of the determinants of recycling behaviors of students (e.g. Boldero, 1995; Derksen & Gartrell, 1993; Kelly et al., 2006; Philippsen, 2015; Tonglet et al., 2004). For instance, Derksen and Gartrell (1993) found that individuals who adopted a favorable attitude toward recycling had a more tendency to recycle if recycling was convenient for them to engage in. Moreover, Kelly et al. (2006) found that college students and employees more intend to perform recycling behavior in campus if it was convenient for them to engage in. In regard to the TPB studies examining recycling behaviors, Boldero (1995) found that inconvenience to recycle was negative but significant predictor of newspaper recycling behaviors of recyclers. Concordantly, Philippsen (2015) investigated the predictors of recycling behaviors of university students, and they found that inconvenience to

recycle significantly but negatively predicted intentions of the students to recycle. Moreover, Tonglet et al. (2004) examined the factors influencing recycling behaviors of residents in U.K., and they found that situational factors such as convenience to recycle were significant predictors of their intention to recycle. Hence, the construct of convenience to recycle was integrated into the present study in order to examine whether it would have a predictive power in the model to explain recycling intentions and behaviors of preschool teachers.

2.5.3. Integration of Past Behavior

Ajzen (1991) posited that previous experiences have an impact of the emergence of future experiences. To illustrate, Scruggs and Mastropieri (1993) stated that past teaching experiences influence the present teaching experiences. That is to say that, the tendency of an individual to engage in a given behavior can be determined by his/her past experiences in regard to the corresponding behavior. Previous studies in which the TPB was utilized as a conceptual framework have demonstrated that past behavior was a significant predictor of recycling behavior (e.g. Boldero 1995; Cheung et al., 1999; Pakpour et al. 2014; Tonglet et al. 2004; Xu et al. 2017). For instance, Pakpour (2014) conducted a study in order to examine the determinants of household waste recycling behavior in Iran and found that past recycling behavior of the participants significantly predicted their current recycling behavior. Similarly, Cheung and his colleagues (1999) examined wastepaper recycling behavior of undergraduate students in Hong Kong by utilizing the TPB and several additional variables including past behavior, as well. As a result of the study, they found that past behavior of the students significantly predicted their current recycling behavior. Furthermore, Boldero (1995) and Xu et al. (2017) confirmed that recycling behavior exhibited in the past has a direct impact on the present recycling behavior. To illustrate, Xu et al., (2017) investigated the predictors of household waste separation behaviors in Hangzhou, China, and they found that past recycling behavior was the major factor lying behind household waste separation intention as well as recycling behavior in Chinese context.

In other words, past recycling behavior of the participants was the strongest factor influencing their intention to recycle as well as their recycling behavior. As a consequence, past recycling behaviors of individuals were included in the model proposed within the present study in order to investigate its predictive power on not only intention of preschool teachers to recycle but also their recycling behaviors.

2.6. The Theory of Planned Behavior Studies

The Theory of Planned Behavior has been widely utilized as one of the most effective conceptual framework in order to examine the essence of human behavior as compared with other models (Ajzen, 2001). To summarize, behavioral intention is regarded as the building block of the theory which makes the strongest contribution to the explanation of a given behavior. For the theory, behavioral intention is determined by the contributions of attitude toward behavior, subjective norms perceived regarding behavior, and perceived behavioral control over behavior as three important predictor constructs. To clarify, if an individual adopts as favorable attitude as possible, has a perception regarding the existence of significant people who think that a specific behavior should be performed, and thinks that the existing circumstances make the behavior easy to perform, s/he will be likely to engage in that behavior (Ajzen, 2005). For this reason, it can be inferred that behavioral intention is considered as the main predictor of behavior, and it is at the hearth of the theory. In addition, it was emphasized that perceived behavioral control can function as a proxy for the current behavior by influencing it in a direct manner, regardless of the mediator role of behavioral intention. In other words, perceived behavioral control is unique in that it can indirectly contribute to the explanation of behavior through the agency of behavioral intention, and it can directly influence that behavior independent of intention to perform that behavior. What is more, attitude toward behavior, subjective norms about behavior, and perceived behavioral control are originated from the corresponding salient beliefs adopted by individuals, namely behavioral beliefs, normative beliefs, and control beliefs (Ajzen, 2005). As a reminder, personal

inferences regarding possible outcomes of a specific behavior, and evaluation of each outcome form the basis of behavioral beliefs of an individual. Normative beliefs, on the other hand, are composed of perceptions of an individual about the expectations of significant others, and his/her motivation to comply with each expectation. Lastly, control beliefs of an individual refer to his/her beliefs regarding whether there exist factors which can promote or hinder the exhibition of behavior, and perceived power of control over each factor (Ajzen, 2005).

In order to provide an empirical support for the TPB in regard to investigate a particular behavior, Ajzen (1991) reviewed 19 studies in which the TPB was used as a theoretical framework. Results of the review illustrated that attitude toward behavior, subjective norms, and perceived behavioral control well predicted intention to perform behavior with a high accuracy level. More specifically, a good number of variance in intention to exhibit behavior was explained with an average correlation value of .71, ranging from .43 to .94. Another result reported by Ajzen (1991) was that 26% of variance in behavior was explained by the theory. In consideration of the results he concluded that the theory of planned behavior predicts behavior. In addition to the review, Notani (1998) conducted a meta analytic research in which 36 theory of planned behavior studies in different fields were included in order to investigate pairwise relations among attitude toward behavior, subjective norms, perceived behavioral control, behavioral intention, and current behavior. Results illustrated that correlations between constructs were in a medium level in that the pairwise correlation between attitude toward behavior and behavioral intention had the highest value (r = .51), whereas the pairwise correlation between subjective norm and perceived behavioral control had the least value (r = .13). In addition, Notani (1998) highlighted that perceived behavioral control was found to be a significant predictor of behavioral intention as well as a given behavior. To specify, perceived behavioral control was predicted behavior better when being operationalized, being conceptualized to provide control over issues which were principally inner for people, as well as utilized for

participants who were not students, and for behaviors they know well (Notani, 1998). In the other hand, perceived behavioral control was reported to be a stronger determinant of behavioral intention when participants were students, and behaviors were familiar for them.

In addition to the Notani's (1998) meta analytic study, Armitage and Conner (2001) conducted another meta analytic research in which 185 theory of planned behavior studies were included. According to the results of the study, the TPB could explain 27% of variance in behavior, and 39% of variance in behavior, regardless of the variables of theory of reasoned action. Moreover, although they found subjective norms to be a weak determinant of behavioral intention, attitude toward behavior, subjective norms, and perceived behavioral control significantly explianed more of the variance in desires of individuals as compared with behavioral intenetion (Notani, 1998).

The aforementioned review and meta analytic studies indicated that the theory of planned behavior is a useful theoretical framework to be used in studies in which predictors of a behavior are investigated. Within this scope, both national and international studies in which the determinant factors influencing recycling behavior were examined are presented in the next section.

2.6.1. National Studies on the Context of Recycling

In regard to the national studies in which the influential determinants of recycling behavior were investigated by utilizing the theory of planned behavior as a conceptual framework, it can be implied that there has been only a limited number of research conducted in Turkish context, according to the best knowledge of the researcher of the present thesis. Research found by the researcher in light of the extant literature are as in the following.

One of the studies in which the determinants of recycling behavior were examined by using the theory of planned behavior was conducted by Arı and Yılmaz (2016). The researchers investigated the predictors of recycling behaviors of housewives living in the city of Eskişehir in Turkey. In order to achieve this purpose, the data were collected from randomly-selected 400 housewives by using questionnaire. Results of the study indicated that intentions of housewives to recycle were statistically significant determined by their subjective norms regarding recycling, and their perceived behavioral control over recycling. In other words, their attitude toward recycling did not contribute to the explanation of their intentions to recycle. Furthermore, the study's findings underlined that perceived behavioral control of housewives over recycling was the strongest predictor of both their recycling intention, and recycling behavior. Based on the findings, it can be inferred that if Turkish housewives regard recycling as an easy behavior to be engaged in, and they are subjected to positive subjective norms regarding the performance of recycling, they will be more likely to engage in recycling behavior.

From a different point of view, in the field of education, a research in which recycling behaviors of preschool teachers were examined with the guidance of the theory of planned behavior has not been found in Turkish context. However, there exist several research including a group of Turkish samples such as teacher candidates were found. One of the studies was conducted by Tekkaya, Kılıç and Şahin (2011b) in order to examine the factors lying behind the campus recycling behaviors of pre-service teachers studying in Turkey by utilizing the theory of planned behavior as a theoretical framework. In pursuit of this aim, the researchers employed a survey to 232 pre-service teachers in faculty of education in two university campuses. On this basis, the obtained data was analyzed by means of a series of multiple linear regression analysis so as to investigate the significant predictors influencing their recycling behaviors. Results of the analysis demonstrated that behavioral intention explained 25% of variance in recycling behaviors of pre-service teachers. It was also found that pre-service teachers'

attitudes toward campus recycling behavior, subjective norms regarding campus recycling behavior, and perceived behavioral control over campus recycling behavior were significantly correlated with their recycling intentions, and explained 31% of variance in their intention to recycle. However, it was not found a statistically significant correlation between their perceived behavioral control over recycling and recycling behaviors. Based on the results of the study, the researchers recommended that pre-service teachers who have more positive attitudes toward recycling, more favorable subjective norms regarding recycling, and higher perceived behavioral control over recycling have a more tendency to take part in recycling behaviors. Within this scope, they concluded that the theory of planned behavior can be utilized as an effective conceptual framework to determine factors influencing recycling behaviors of Turkish pre-service teachers.

Kahriman-Öztürk (2016), on the other hand, conducted a research by studying with a more specific sample group, pre-service preschool teachers, in order to investigate to what extent the components of the theory of planned behavior explain their recycling behaviors. In this respect, the necessary data were collected from 181 pre-service preschool teachers by utilizing a survey. Findings of the study showed that the participant students' attitudes toward recycling, subjective norms regarding recycling, and perceived behavioral control over recycling were found to be statistically significant determinants of their intention to recycle. To put it in a different way, these constructs explained 25% of variance in intentions of pre-service preschool teachers to engage in recycling behavior.

In addition to these studies, Öztekin et al. (2017) examined the impact of socio-psychological factors, especially gender, on the explanation of recycling behaviors of university communities in Turkey utilizing the extended version of the theory of planned behavior with the usage of past behavior construct. In this respect, the necessary data for the study were collected from 863 adults who are the members of

two public university including students, academicians, and nonacademic personnel by using a self-reported survey. They analyzed the obtained data by using correlational research methodology in three steps including descriptive and inferential statistics such as t-test which were employed to understand whether there is a difference among recycling behaviors of the university community and the corresponding attributes by gender. Furthermore, path analysis as a structural equation modelling analysis was utilized to examine the ability of the theory of planned behavior components to explain their recycling behavior and the corresponding attributes. As a result of the study, it was found that attitude toward behavior, subjective norms, and perceived behavioral control indicated a correlation with their corresponding salient beliefs. Moreover, each construct included in the study statistically significantly predicted intention of the participants to recycle. Furthermore, a significant difference was found between the participants' attitudes toward recycling and intention to recycle by gender. To specify, the participant females' attitudes toward recycling and intention to recycle were found to have a higher value as compared with the participant males. Additionally, attitude toward behavior, subjective norms, perceived behavioral control, and the additional variable of past behavior explained 36% of variance in behavioral intention of the all participant group, and 44% of variable in the females' behavioral intentions, and 33% of variance in males' behavioral intentions. In terms of the explanation of behavior, on the other hand, 17% of variance in recycling behaviors of males was explained by their intentions to recycle, and 6% of variance in females' recycling behaviors was explained by their recycling intentions.

In addition to the existence of the aforementioned national studies investigating recycling behavior within the scope of the theory of planned behavior, it is expected that the results of the current study may make significant contributions to the corresponding national literature on recycling and the theory of planned behavior by providing evidences in relation with early childhood education within the Turkish context.

2.6.2. International Studies on the Context of Recycling

Besides those national studies, there exists a considerable number of research in which the critical predictors of recycling behavior were investigated using the theory of planned behavior. For instance, Taylor and Todd (1995) examined the antecedents of recycling and composting behaviors using the theory of planned behavior. On this basis, they collected data from 761 households by using a questionnaire in Western cultural setting where recycling opportunities have been offered for the dwellers for years. They used structural equation modelling for recycling and composting behaviors in a separate way. In regard to recycling, results of the study indicated that intentions of the households to recycle were significantly and positively predicted by means of their attitude toward recycling, and perceived behavioral control over recycling, but were negatively impacted by their subjective norms about recycling. In terms of composting, on the other hand, their intention was positively and significantly predicted by attitude toward recycling, subjective norms about recycling, and perceived behavioral control over recycling. However, because of the lack of items measuring recycling and composting behaviors of the participants, the researchers did not report any information based on the influence of the constructs of the theory of planned behavior on recycling behavior.

In line with Taylor and Todd (1995), Chan (1998) examined recycling behaviors of households in order to investigate their attitudes toward recycling, subjective norms regarding recycling, perceived behavioral control over recycling, intentions to recycle, and recycling behaviors, and to investigate the ways of social media in bringing about social norms. On this basis, the data were collected from 173 households living in Hong Kong using a questionnaire. In order to analyze the data, the researcher utilized Chi-square statistics in order to examine whether non-users, light users, and heavy users differ in terms of their educational level and their job, demonstrating that they did not differ in these demographic information. Furthermore, descriptive statistics which were used in the study indicated that both non-users, light users, and heavy users

reported positive attitude toward recycling, and strong subjective norms regarding recycling, perceived behavioral control over recycling, recycling intentions, and recycling behaviors. Moreover, F-tests which were conducted to examine the mean scores of the user groups' attitudes, subjective norms, and behavioral intention illustrated that mean scores of their attitudes, subjective norms, and behavioral intention statistically differed in terms of the user groups. On the other hand, mean scores of their perceived behavioral control over recycling did not differ in terms of the user groups. Additionally, multiple regression analysis was employed in order to investigate the predictive power of the theory of planned behavior constructs on behavioral intention as well as behavior, resulting in that attitude, perceived behavioral control, and subjective norms contributed to the explained variance in behavioral intention, respectively. Concordantly, behavioral intention significantly predicted their behavior. In addition, mass media was found to be an important source of subjective norms of the participants regarding recycling.

Another study in which recycling behaviors of households were examined was conducted by Terry et al. (1999) by using an extended version of the theory of planned behavior including the constructs of self-identity, social identity, and group norms. More specifically, the researchers intended to investigate the roles of self-identity alone, and with social identity in determining recycling intentions and behaviors as well as impacts of self-identity as a function of past recycling behavior in a longitudinal study. In this regard, the data were collected by 143 households who receive recycling opportunities by a city council in Australia. Participants completed a questionnaire to examine their intentions to recycle and the proposed determinants of recycling behaviors. Two week later than the distribution of the first questionnaire, they scored their recycling behaviors in a 2-week period using a self-report questionnaire. As a first data analysis technique, hierarchical regression analysis was employed to investigate the impacts of self-identity in the corresponding theory. As a next step, the second analysis was conducted to discover the difference between norms

constructs, namely the variables of subjective norms and group norms, resulting in providing empirical supports for the distinction between the two types of norms in two factors. The last analysis was run to investigate the items related to the identity content, demonstrating that self-identity, group norms, and group identification were separated into three distinct factors. As a result of the study, it was found that self-identity was found to be an independent predictor of recycling intention, and it indirectly determined recycling behaviors of the participants through the agency of recycling intention. Furthermore, the relationship between group norms about recycling and recycling intention was moderated by group identity regarding recycling. Moreover, past recycling behaviors of the households moderated the relationship between their attitude toward recycling and intention to recycle. Recycling intentions of the households were also significantly determined by their perceived behavioral control over recycling which did not have a direct influence on their current recycling behaviors. On the other hand, subjective norms regarding recycling did not significantly determine recycling intentions of the households in Australia. Lastly, recycling intentions of the participants significantly determined their recycling behaviors.

Chu and Chiu (2003) conducted a study in which household waste recycling behaviors were investigated within the scope of the theory of planned behavior. Although their study showed several similarities with those of Taylor and Todd (1995), Chan (1998), and Terry et al. (1999) in terms of the type of behaviors and the sample group they concentrated on, Chu and Chiu's (2003) study were different from those studies in that it investigated the same behavior in a different setting with the impact of moral norms as a different additional variable which was not touched by the aforementioned studies. In this respect, Chu and Chiu (2003) examined the predictors of household recycling behavior in Taiwan. The necessary data were obtained from 386 dwellers residing in Kaohsiung by using a questionnaire. In their study, both descriptive studies and structural equation modelling was utilized to analyze the obtained data. Results of the

study indicated that intentions of the residents to recycle were significantly determined by perceived behavioral control over recycling, attitude toward recycling, subjective norm regarding recycling, and moral norms regarding recycling, in a descending order respectively. Moreover, their intentions to recycle was found to be a significant predictor of their recycling behaviors.

In a similar manner with Chu and Chiu's (2003) study, Tonglet et al. (2004) concentrated on the impact of moral norms on recycling intention of households with some more additional variables such as consequences of recycling, past behavior, and situational factors in regard to the subject of recycling. Herein, in order to examine the antecedents of recycling behaviors of households, the researchers collected data from 191 residents in the United Kingdom. As a statistical technique, multiple regression was used to analyze determine the predictive power of the constructs on recycling intention as well as recycling behavior. Results of the study indicated that among the constructs of the theory of planned behavior, only attitude toward behavior could statistically predict behavioral intention. With regard to the additional variables, consequences of recycling, moral norms, and past behavior about recycling significant determined behavioral intentions to recycle, whereas situational factors did not make a statistically significant contribution to the explanation of recycling intentions. Furthermore, current recycling behaviors of the participants were significantly predicted by their behavioral intentions.

In another study, Oom Do Valle et al. (2005) combined several theories' contents, namely the theory of planned behavior, the model of altruistic behavior, the model of environmental behavior, and the model of environmental concern in order to obtain an extensive structural model to be used in explaining recycling behaviors. In pursuit of this aim, the researchers collected data from 2093 households in Portugal by using a questionnaire including items related to attitude toward recycling, subjective norms regarding recycling, perceived behavioral control over recycling, perceived

convenience to recycle, specific knowledge, personal norms about recycling, general environmental attitude, personal values, and communication to recycling. The obtained data were analyzed by using structural equation modelling. Results of the study demonstrated that general environmental attitudes directly and significantly predicted attitude toward recycling. Moreover, perceived behavioral control was directly significantly determined by specific knowledge, and perceived convenience, whereas it was not significantly determined by communication through the agency of specific knowledge. Recycling behaviors of the participants, on the other hand, were significantly determined by their personal norms, subjective norms, and perceived behavioral control over recycling. Furthermore, attitude toward behavior negatively but significantly determined recycling behaviors.

Chen & Tung (2010) conducted a study in which recycling behaviors of consumers were investigated within the scope of the theory of planned behavior. In their study, they utilized additional variables such as moral norms about recycling, consequences of recycling, and perceived lack of facilities in addition to the theory of planned behavior constructs. In this respect, they collected data from 541 respondents in Taiwan by using a questionnaire. Throughout the study, they utilized perceived lack of facilities as a moderator variable. As a data analysis strategy, ordinary least squares linear regression analysis was utilized by the researchers to investigate the paths among the constructs. Results of the study demonstrated that respondents' attitudes toward recycling, subjective norms regarding recycling, moral norms, and consequences of recycling were found to be significant predictors of their intentions to recycle. However, their perceived behavioral control over recycling did not contribute to the explanation of recycling intentions. Furthermore, one of the key findings of the study indicated that recycling behaviors of the participants were not significantly determined by their perceived behavioral control over recycling. On the other hand, their recycling behaviors were found to be significantly explained by their intentions to recycle. Based on the results of the study, the researchers highlighted that

the integrated model proposed based on the theory of planned behavior in which moral norms, consequences of recycling, and perceived lack of difficulty were included was an effective model in order to explain recycling behaviors of consumers in the context of Taiwan.

Pakpour et al. (2014) conducted a study in which factors influencing household recycling behaviors were examined within the scope of the theory of planned behavior. In their study, they proposed model including moral norms, self-identity, action planning, and past behavior as additional predictor variables of behavioral intention in addition to attitude toward behavior, subjective norms, and perceived behavioral control. They collected data from 1782 participants in Iran at two different times. In fact, the data were collected from them at time 1, and one year later at time 2. As a data collection tool, they utilized a self-reported questionnaire including both demographic information and items regarding attitude toward recycling, subjective norms, perceived behavioral control, intention, self-identity, moral norms, action planning, and past behavior in related to recycling. One year later, the participants were asked to complete a follow-up self-reported questionnaire about their recycling behaviors. Findings of the study indicated that intentions of the participants were significantly determined by attitude toward recycling, subjective norms about recycling, perceived behavioral control over recycling, moral norms about recycling, self-identity with regard to recycling, action planning on recycling, and past recycling behavior. Furthermore, their intention to recycle significantly predicted their recycling behavior.

Similar with Pakpour et al. (2014), Botetzagias et al. (2015) investigated recycling behaviors of Greek citizens within the scope of the extended version of the theory of planned behavior in which moral norms as well as demographic information were included. They primarily had two aims about whether the integration of moral norms into the proposed model promotes the explained variance in intention to recycle, and

whether intention to recycle was directly determined by the integration of moral norms as a predictor variable of intention, or by integration of moral norms through the mediator role of attitude toward behavior. In this respect, they tested three structural models. In the first model, they integrated demographic information such as education level, gender, income, and age into the model as predictors of attitude toward behavior, subjective norms, perceived behavioral control, as well as intention to recycle which was also predicted by the standard construct of the theory of planned behavior. In the second model, they hypothesized a structural model in which moral norms were replaced with attitude toward behavior as a predictor variable of intention to recycle which was also predicted by the standard construct of the theory. In the third model, on the other hand, moral norms were integrated into the model as a direct and indirect predictor of intention to recycle through the agency of attitude toward behavior. In this regard, they collected data from 293 Greek citizens using an online questionnaire. The obtained data was analyzed by utilizing structural equation modelling. Results of the study indicated that perceived behavioral control was found to be the strongest predictor of intention to recycle. In addition, moral norms were found to be a stronger predictor of behavioral intention as compared with the impacts of attitude on recycling intention. Moreover, moral norms mostly had a direct influence on the behavioral intention as well as an indirect influence of the same construct. In addition, not only perceived behavioral control and moral norms but also subjective norms and attitudes were found to be strong predictors of recycling intention. However, demographic information did not make a significant contribution to the explanation of recycling intentions of the participants.

In addition, a current study was conducted by Xu et al. (2017) in order to examine the antecedents of household waste separation behaviors in Hangzhou, China. In consideration of this aim, they collected data from 628 households through a survey questionnaire including items on the subjects of attitude toward behavior, subjective norms, perceived behavioral control, moral obligations, past behavior, and

demographic information. In data analysis, they utilized descriptive statistics as well as partial least square structural equation modelling. Findings of the study illustrated that subjective norms, and past behaviors significantly determined waste separation intention, while perceived behavioral control and attitude toward behavior which was significantly predicted by moral norms did not contribute to the explanation of waste separation intention of the participants. Moreover, past behavior which the strongest predictor of behavioral intention was found to be a strong predictor of waste separation behavior, as well.

Besides the aforementioned international studies which were conducted with households primarily on the subject of household recycling, there exist several more international studies conducted in the field of education. For instance, Boldero (1995) conducted a study in order to investigate newspaper recycling behaviors of individuals who engaged in recycling behaviors throughout a 2-week observation period, and those who did not engage in recycling behaviors in the same time interval. In this respect, the necessary data were collected from 254 freshmen psychology students studying at a metropolitan university in Australia through a questionnaire including factors based on the theory of planned behavior. In the questionnaire there were a number of items regarding the salient beliefs (behavioral, normative, and control beliefs) and their strengths (outcome evaluation, motivation to comply with the normative beliefs, and power of control), attitude, subjective norms, perceived behavioral control, behavioral intention, and behavior on the subject of newspaper recycling; and additional contextual factors including restriction on storage space, lack of newspapers to recycle, provision and evaluation of a borough council curbside recycling program, and past and current recycling behavior. In the data analysis procedure, descriptive, logical regression, and multiple regression analyses were utilized. Boldero's (1995) study revealed that significant differences were found between the recyclers and non-recyclers in terms of their attitudes toward recycling, subjective norms regarding recycling, and intentions to recycle. In fact, newspaper

recycling intentions were statistically significantly determined by attitudes, and situational factors, except from the restriction on storage space. In addition, subjective norms and perceived behavioral control regarding newspaper recycling did not contribute to the explanation of intention to recycle. Moreover, intentions to recycle newspapers significantly and positively predicted the newspaper recycling behaviors which were determined by evaluation of council curbside recycling program, and past behavior, and restriction on storage space, as well. On the other hand, perceived behavioral control was not found to be a significant determinant of newspaper recycling behaviors.

Cheung et al. (1999) investigated the factors lying behind waste-paper recycling behaviors of undergraduate students in Hong Kong by using the extended version of the theory of planned behavior including additional variables of general environmental knowledge and past recycling behavior. In other words, their study is different from the Boldero's (1995) study in terms of the cultural context, and variables included in the studies, whereas both studies resemble in terms of studying with undergraduate students, and the target behavior. In their study, Cheng et al. (1999) collected data from 282 students through a questionnaire. They used hierarchical regression analysis in data analyses procedure. Results of the study indicated that as the main components of the theory of planned behavior, attitude toward recycling, subjective norms regarding recycling, and perceived behavioral control over recycling which included two groups of variables (perceived difficulty and perceived control) significantly determined recycling intention. In fact, perceived behavioral control moderated the relationship between behavioral intention and the current behavior. In addition, general environmental knowledge and past recycling behaviors were identified as significant predictors of intention to recycle, separately. Moreover, not only behavioral intention but also general environmental knowledge had a statistically significant influence on waste-paper recycling behaviors.

In a doctoral dissertation, Chaisamrej (2006) investigated the predictive ability of the proposed model in which behavioral intentions were supposed to be determined by attitude toward behavior, subjective norms, perceived behavioral control, altruism, knowledge of paper recycling, and self-construal regarding recycling. The researcher also aimed to examine the moderator role of individualism and collectivism in the relationship between attitude and behavioral intentions as well as the relationship between subjective norms and behavioral intentions, to make a comparison between the predictive ability of the theory of planned behavior and the proposed model in the study, and to identify the identify the relationship between two different types of intentions, namely behavioral intentions, and implementation intentions. To reach those aims, the researcher collected data from 417 university students in Thailand, and from 432 university students in the United States. The main motivator of the researcher to select those countries was highlighted as the fact that Thailand is a collectivist culture, while the United States are an individualistic culture. In data analysis procedure, structural equation modelling was utilized by the researcher in order to examine the predictive power of the theory of planned behavior and the proposed model utilized in the study. For the purpose of investigating the moderator roles of individualism and collectivism, a multi-group structural equation modelling was utilized, whereas correlation analysis was used to examine the relationship between two types of intention constructs. Findings of the dissertation indicated that while subjective norms regarding recycling and perceived behavioral control over recycling were found to be significant determinants of recycling intentions of the students in both countries, attitude toward recycling did not make a significant contribution to the explanation of recycling intentions in Thailand, but significantly predicted recycling intentions of students in the United States. Furthermore, altruism was found in both countries to be a significant construct explaining not only attitudes toward recycling but also perceived behavioral control over recycling. Moreover, a direct influence of altruism was found on recycling intentions in both samples. Additionally, in both settings attitude toward recycling and subjective norms were found to be significantly

influenced by self-construal constructs. On the other hand, it was found that knowledge of students regarding paper recycling did not make a significant contribution to the explanation of attitudes toward recycling and recycling intentions in Thailand and the United States. When the predictive power of the theory of planned behavior and the proposed model was compared, results indicated that the theory of planned behavior indicated better results in terms of Chi-square values and R-square than the proposed model in consideration of paper recycling behaviors. Lastly, it was reported that two different types of intentions illustrated a positive relationship with each other.

Another contribution about the application of theory of planned behavior the field of education was made by Wan et al.'s (2012). In their study, the researchers aimed to investigate the antecedents of a university community's recycling behaviors within the scope of the theory of planned behavior. In this respect, they proposed a structural model including constructs of attitudes toward recycling, subjective norms regarding recycling, perceived behavioral control over recycling, consequences awareness toward recycling, moral norms regarding recycling, and convenience to recycle. In pursuit of this aim, they collected data from 179 university students and 26 staff in a public university in Hong Kong. The obtained data were analyzed using structural equation modelling. Findings of the study indicated that all of the predictor variables included in the study significantly determined behavioral intention. In other word, not only the constructs of the theory of planned behavior (attitude toward behavior, subjective norms, and perceived behavioral control) but also the additional variables (moral norms, consequence awareness, and convenience) contributed to the explanation of recycling intentions of the participant university members. However, it was highlighted that there was a low contribution of the participants' moral norms regarding recycling to their intention to recycle. In addition, their intentions to recycle were found to be a significant predictor of their recycling behaviors.

Chan and Bishop (2013) conducted a study in order to investigate the moral basis of recycling behaviors by using the theory of planned behavior. In their study, they integrated moral norms into two different ways in their proposed models even if discriminant validity was satisfied between attitude toward recycling and moral norms. The first model they proposed included moral norms as a separate predictor variable in addition to attitude toward behavior, subjective norms, and perceived behavioral control. In the second model, they included moral norms as a predictor variable of attitude toward behavior in that subjective norms and perceived behavioral control functioned as the predictor variables of intention to recycle. In the data collection procedure, the researchers collected data from 271 participants which included 226 university students. They analyzed the obtained data by using structural equation modelling. Results of the study indicated that there was a convergent validity was not supported as a result of the confirmatory factor analysis. For this reason, as a third model, they replaced moral norms with attitude toward behavior by removing the construct of attitude from the proposed model. As a result of the data analysis process, it was found that the current model fitted well with the corresponding data set. More specifically, not only subjective norms of the participants regarding recycling and their perceived behavioral control over recycling but also their moral norms regarding recycling significantly predicted their intention to recycle. Furthermore, their intention to recycle significantly determined their recycling behaviors which was determined by their perceived behavioral control over recycling independent of other predictor variables, as well.

Another study in the field of education was conducted by Poskus (2015) in order to examine the ways of integrating moral norms into the theory of planned behavior. In accordance with this purpose, the researcher proposed four models in which moral norms were included in different ways. In the first model, attitude toward behavior was removed from the model, and moral norms were replaced with the attitude toward behavior as a predictor variable of behavioral intentions which were supposed to be

determined also by subjective norms and perceived behavioral control. In the first model, a direct impact of perceived behavioral control on behavior was hypothesized, as well. In the second model, moral norms were replaced with attitude toward behavior, and moral norms functioned as a predictor variable of behavioral intention as subjective norms and perceived behavioral control did. In addition, in the second model a separate but direct impacts of moral norms and perceived behavioral control on behavior were proposed as its predictor variables independent of behavioral intention. In the third model, moral norms were integrated into the model as a predictor variable of behavioral intention in addition to attitude toward behavior, subjective norms, and perceived behavioral control. Furthermore, in the third model, perceived behavioral control was proposed as a direct predictor of behavior independent of the agency of behavioral intention. In the third model, on the other hand, moral norms were proposed as a predictor variable of behavioral intention in addition to attitude toward behavior, subjective norms, and perceived behavioral control. Moreover, direct impacts of moral norms and perceived behavioral control on behavior were proposed in the last model, as well. In order to test the four proposed model, the researcher collected data from 142 university students in Lithuania by using a questionnaire. As a result of the study, it was found that the fourth model was accepted. In other words, moral norms were found to be a stronger predictor of not only behavioral intention but also behavior, while being replaced with attitude toward behavior. However, although moral norms significantly predicted recycling behaviors of the students in the context of Lithuania, behavioral intention was the strongest predictor of their recycling behavior in any case.

In addition to Poskus (2015), Philippsen (2015) conducted a research in which factors influencing recycling behaviors of university students were investigated. Unlike Poskus (2015), she did not only concentrate on the role of moral norms in determining recycling behavior, instead she also investigated the predictive roles of past behavior, inconvenience, and knowledge of recycling on behavioral intention in addition to the

constructs of attitude toward behavior, subjective norms, perceived behavioral control. In pursuit of this aim, she collected data from 116 university students in Nederland by means of an online questionnaire. In order to analyze data, multiple regression analysis was utilized to determine recycling intentions of the participant students. Results of the study illustrated that moral norms regarding recycling, past recycling beahvior, and invenience to recycle significantly contributed to the explanation of intention to recycle, whereas attitude toward recycling, subjective norms, perceived behavioral control, and knowledge of recycling did not make a significant contribution to the explanation of recycling intention.

Finally, another study was conducted by Gadiraju (2016) in order to examine the antecedents of recycling intentions of university students within the scope of the extended version of the theory of planned behavior. In this respect, the researchers integrated several additional variables such as moral norms, knowledge of how and what to recycle, knowledge of consequences, past recycling beahvior, and inconvenience to recycle. The data were collected by 172 university students in the United States by utilizing an online survey. Results of the study indicated that psat recycling behavior was found to be the strongest predictor of recycling intention. Furthermore, while inconvenience to recycle did not contribute to the explanation of behavioral intention because of its negative and non-significant relationship with behavioral intention, other additional variables which were moral norms, knowledge of how and what to recycle, and knowledge of consequences significantly determined intentions of the students to recycle.

2.7. Summary of Literature Review

On a broader perspective, review studies as well as meta analytic research regarding the TPB offered a good number of empirical evidences indicating that the TPB has served as a useful conceptual framework for understanding the determinants of specific human behaviors in different research fields (e.g. Ajzen, 1991; Notani, 1998).

In consideration of the national studies conducted on the context of recycling, results varied across the samples utilized in those research. Specifically, attitude toward behavior, subjective norms, and perceived behavioral control significantly predicted recycling intentions of pre-service teachers (Tekkaya et al., 2011b), pre-service preschool teachers (Kahriman-Öztürk, 2016), a university community in Turkey (Öztekin et al., 2017). However, Arı and Yılmaz (2016) found that attitude of Turkish households did not make a significant contribution to the explanation of their recycling intentions, whereas their perceived behavioral control significantly predicted their recycling behaviors with the corresponding intentions.

Besides, international studies indicated inconsistent results in terms of the predictive power of the TPB constructs. For instance, attitude emerged as the strongest predictor of recycling intentions in the study of Chan (1998) with households in Hong Kong, while subjective norms were found to be strong determinant of households' recycling intentions in Portugal (Oom Do Valle et al., 2005). Similarly, perceived behavioral control was found to be the strongest determinant of recycling intentions of households in Taiwan (Chu & Chiu, 2003). Furthermore, intention was found to be the single predictor of recycling behaviors of households in Taiwan (Chen & Tung, 2010), while perceived behavioral control made a statistically significant contribution to the explanation of a university community's recycling behaviors in the study of Chan and Bishop (2013). For this reason, the literature review provided empirical evidences demonstrating that the predictive power of the TPB constructs differed in terms of sample groups and cultural contexts. Furthermore, the results supported the notion of Ajzen (2005) that in different sample groups only attitudes, subjective norms, perceived behavioral control or their association significantly predict a given behavior through behavioral intention. Likewise, there existed inconsistent results based on the predictive powers of the additional constructs (moral norms, convenience, and past behavior) in the previous studies. For example, integration of moral norms into a proposed TPB model highlighted that it was a strong determinant of recycling

intentions of households in the United Kingdom (Tonglet et al., 2004), and in Taiwan (Chen & Tung, 2010), it slightly predicted recycling intentions of a university community in Hong Kong (Wan et al., 2012), and of households in Kaohsiung (Chu & Chiu, 2003). In addition to the predictive power of moral norms in recycling intention, Poskus (2015) highlighted that moral norms made a statistically significant contribution to the explanation of recycling behaviors of university students in Lithuania while being replaced with the attitude construct. Moreover, convenience to recycle was found to be a significant determinant of recycling intentions of university students in Netherland (Philippsen, 2015), and in Hong Kong (Wan et al., 2012). Likewise, past behavior was found to be a significant predictor of recycling intentions of households in the United Kingdom (Tonglet et al., 2004), and that of household waste separation intentions in Hangzhou in China (Xu et al., 2017). It was also found that past behavior was found to be a significant predictor of recycling behaviors of participants in Australia (Boldero, 1995), and of households in China (Xu et al., 2017).

As earlier mentioned, results of the previous national and international research conducted on the context of recycling illustrated a limited number of studies conducted in the field of education targeting a university community such as staff and undergraduate students. To the best knowledge of the current study's researcher, it could not be found any research centering on preschool teachers' recycling behaviors. In this respect, the present study is an attempt to fill the gap in the existing literature by centering upon the determinants of preschool teachers' recycling behavior.

CHAPTER 3

RESEARCH METHODOLOGY

In this chapter, research methodology utilized in the current study is presented. Firstly, design of the study is elucidated in accordance with correspondent research questions and hypotheses. Secondly, details about population and sampling procedure are addressed in conjunction with external validity. Thirdly, instrumentation is clarified higlighting adaptation of the instruments and pilot study, and checking validity and reliability issues. Fourthly, data collection procedure is explained dealing with potential threats to internal validity. Fifthly, data analysis procedure is delineated. Sixtly, ethical issues which are considered throughout the study are explicated. Lastly, assumptions and limitations of the study are delineated in line with the rational behind them.

3.1. Design of the Study

The current study intended to identify the determinants of recycling behaviors of preschool teachers within the frame of Theory of Planned Behavior (TPB; Ajzen, 2005). Specifically, the relationship between cognitive constructs or indirect measurements of the TPB (behavioral beliefs, normative beliefs, and control beliefs) and its psychological constructs or direct measurements of the TPB (attitudes toward behavior, subjective norms, perceived behavioral control, behavioral intention, behavior) within the scope of recycling were investigated in the study. Moreover, additional variables (past recycling behavior, convenience for recycling, and moral norms about recycling) were integrated into the present study as predictor variables which affect the criterion variable which is intention of preschool teachers to recycle.

At this juncture, positivist paradigm was used in this study as an epistemological perspective along with quantitative methodology. Researchers who subscribe to a positivist paradigm aim to reach a single social reality or generate an objective knowledge independent of personal bias, thoughts or judgements (Marczyk, DeMatteo & Festinger, 2005). That is, research in which positivist epistemology is adopted are purified from personal ideas of researchers so as to acquire objective results. In this regard, correlational research design which attempts to determine the extent of relationships among two or more numerical variables or to make predictions in consideration of these relationships without any manipulation of these variables (Gay & Airasian, 2000) was utilized in the current study by means of survey method frequently used in positivist research (Fraenkel, 2012; Tuli, 2010). According to Fraenkel and Wallen (2006), specifying certain characteristics of a representative sample can be achieved through survey research method. Herein, it can be inferred that the present study is a harmony of survey and correlational research. In terms of time dimension, on the other hand, this study is a cross-sectional study in which data collection was performed at one point in time (Johnson, 2001).

Hereinbefore, 11 theoretical components consisting of main TPB components (attitude toward behavior, subjective norms, perceived behavioral control, behavioral intention, behavior), their salient beliefs (behavioral beliefs, normative beliefs, control beliefs), and additional components (past behavior, convenience, moral norms) were included in the study, as presented in Figure 3.1

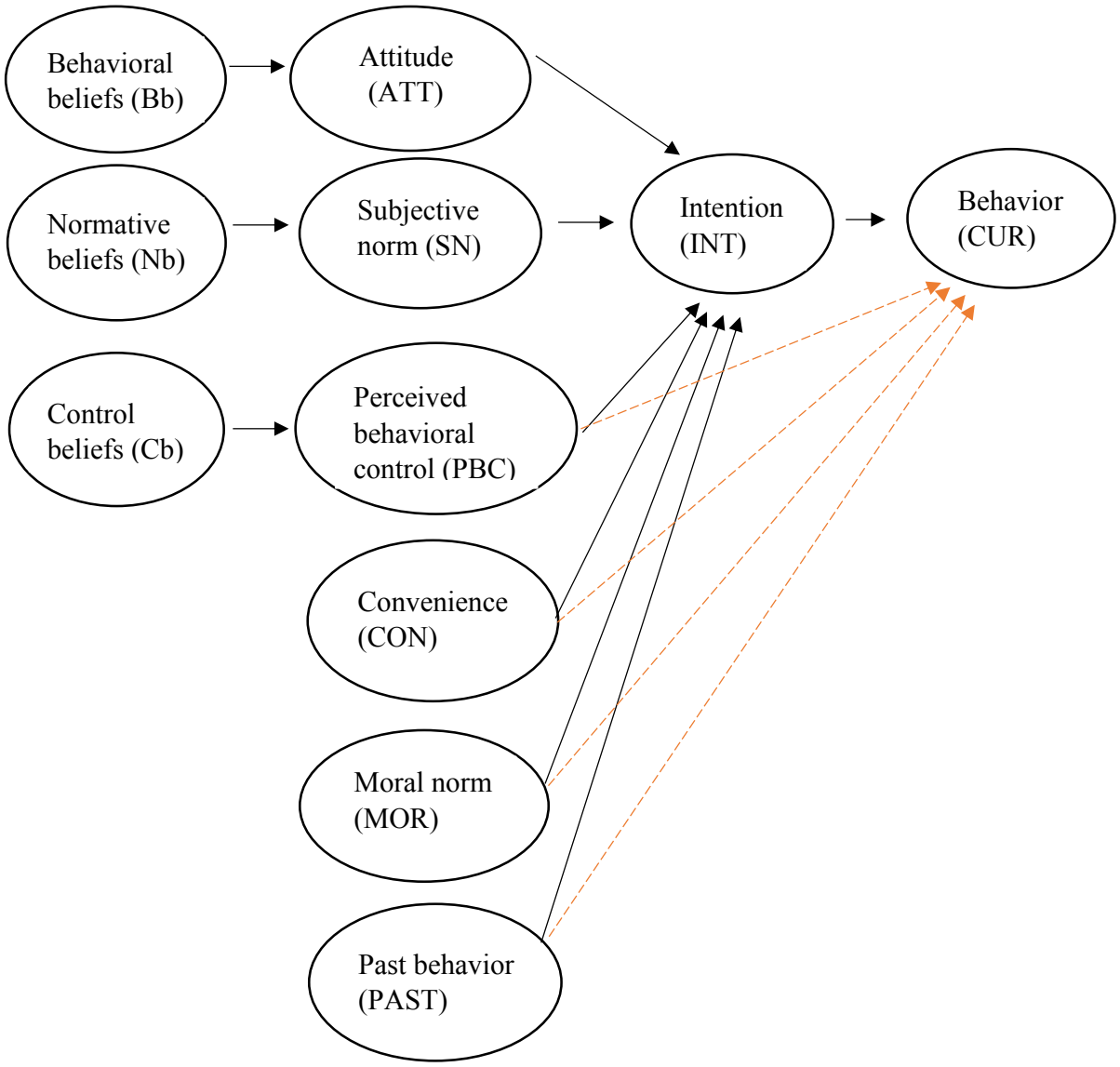


Figure 3. 1 Proposed Model for the Study

Taking insight from the relevant literature, the proposed model indicated in Figure 3.1 and the corresponding hypotheses were developed so as to gain a clear understanding of the determinants of recycling behaviors of preschool teachers within the scope of TPB and additional variables. On this basis, the following research questions (R.Q.) and the corresponding hypotheses are addressed in the present study:

R. Q.1: What are preschool teachers' levels of attitudes towards recycling, subjective recycling norms, perceived behavioral control over recycling, past recycling behavior, convenience for recycling, moral norms regarding recycling, recycling intentions and current recycling behaviors?

R.Q.2: In what ways each cognitive construct of the TPB (behavioral, normative and control beliefs regarding recycling) associated with their corresponding psychological constructs (attitudes towards recycling, subjective recycling norms, and perceived behavioral control over recycling)?

H_0 : There is no statistically significant relationship between cognitive constructs of TPB (behavioral beliefs, normative beliefs, and control beliefs regarding recycling), and their corresponding psychological constructs (attitudes towards recycling, subjective norms regarding recycling, and perceived behavioral control over recycling).

H_1 : There is a statistically significant relationship between cognitive constructs of TPB (behavioral beliefs, normative beliefs, and control beliefs regarding recycling), and their corresponding psychological constructs (attitudes towards recycling, subjective norms regarding recycling, and perceived behavioral control over recycling).

R.Q.3: How well preschool teachers' recycling intentions be explained by the TPB variables (their attitudes towards recycling, subjective recycling norms, and perceived behavioral control over recycling) and additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling)?

H_0 : The TPB variables (attitudes towards recycling, subjective norms regarding recycling, and perceived behavioral control over recycling), and additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling) are not significant determinants of preschool teachers' intentions to recycle.

H_1 : The TPB variables (attitudes towards recycling, subjective norms regarding recycling, and perceived behavioral control over recycling), and additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling) are significant determinants of preschool teachers' intentions to recycle.

R.Q.4: How well preschool teachers' recycling behavior be explained by the TPB variables (recycling intentions, perceived behavioral control over recycling), additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling)?

H_0 : The TPB variables (behavioral intention to recycle, and perceived behavioral control over recycling), and additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling) are not significant determinants of preschool teachers' recycling behaviors.

H_1 : The TPB variables (behavioral intention to recycle, and perceived behavioral control over recycling), and additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling) are significant determinants of preschool teachers' recycling behaviors.

3.2. Population and Sampling

According to Gravetter and Wallnau (2013), it is impractical for researchers to reach population which includes all individuals with specific characteristics are of interest to them. In a similar manner, providing access to target population which allows researchers to make generalizations is not viable for researchers (Fraenkel, Wallen & Hyun, 2015). Notwithstanding the inaccessibility of target population in a research, it is an important step to designate an appropriate sample for a study. For this reason, in this study target population included all preschool teachers currently working at public schools within the borders of Ankara, the capital city of Turkey. In this respect, recent national statistics for formal education in 2016-2017 presented by the Turkish Ministry of National Education (MoNE, 2017) is of particular importance to be aware of the whole picture covering the number of preschool teachers working at public school in Ankara. Specific information about the number of these teachers are depicted in Table 3.1.

Table 3. 1

Number of Preschool Teachers Working at Public Schools in Ankara

Type of school	Number of teachers
Independent kindergarten	1140
Nursery class	2399
Total	3539

According to the Table 3.1, 67.8% of the preschool teachers are working at public schools in Ankara while 32.2% of them are working at private schools. In this study, participants were selected from public schools included in the different districts of Ankara. In particular, as a sub-set of target population, accessible population which allows researchers to generalize research findings (Fraenkel, Wallen & Hyun, 2015) was determined in this study as all of the preschool teachers working at public schools in nine central districts of Ankara which are namely Altındağ, Çankaya, Etimesgut, Gölbaşı, Keçiören, Mamak, Pursaklar, Sincan, and Yenimahalle. Since reaching the accessible population was not manageable for the study by means of accessibility, using one of the non-random sampling techniques which are used in a large proportion of educational research because of inapplicability regarding random selection of participants was considered in the present study (Fraenkel & Wallen, 2006). To specify, according to Fraenkel, Wallen and Hyun (2015), obtaining random samples may not applicable considering inaccessibility in terms of time, transportation and financial difficulties. Owing to these constraints, convenient sampling was employed in the current study so as to select participant preschool teachers working in the aforementioned districts. Correspondingly, in consideration of the recent national statistics presented by Turkish Statistical Institute (TSI; 2017) and the Ministry of National Education (MoNE; 2017), nine out of 25 districts with the highest numbers of preschool teachers were selected as the interested districts for this study.

In order to decide the schools where participant teachers are being worked, current list of public schools in the nine districts was acquired in consideration of 2016-2017 national statistics for formal education (MoNE, 2017). In light of the relevant literature regarding proposed number for sample size, particularly in a factor analysis, different researchers regarded several minimum desirable numbers for sample size (e.g. Gorsuch, 1983; Guilford, 1954; Comrey & Lee, 1992). Indeed, minimum number for N value was proposed as 100 by Gorsuch (1983) and Kline (1979), 200 by Guilford (1954) and 250 by Cattell (1978). In addition, N/p ratio was suggested in the range of

three to six by Cattell (1978), as five or more by Gorsuch (1983) and at least 10 by Everitt (1975) in order to obtain an acceptable number of sample for a study including factor analysis. Furthermore, Comrey and Lee regarded 500 samples as a very good number to get an accurate conclusion within a study. In light of the information based on the ideal sample size for a factor analysis, at least 500 participants were aimed in this study. In this respect, since the percentage of the ratio of 500 participants to 3013 preschool teachers working in the interested districts in total was about 17 percent, this rate was intended to reach participants in each district while determining samples of the main study. Relevant information about the total number of preschool teachers, expected number of participants with the aforementioned ratio, obtained number of participants, and percentage of participants by the nine central districts of Ankara are indicated in the following Table 3.2.

Table 3. 2

Total number of Preschool Teachers and number and percentage of participants by central districts of Ankara in the Educational Year 2016-2017

District	Total number of preschool teachers	Number of participant		Percentage of participants included in each district
		Expected	Obtained	
Altındağ	282	48	55	19.50%
Çankaya	538	92	101	18.77%
Etimesgut	414	70	90	21.73%
Gölbaşı	117	20	31	26.50%
Keçiören	537	91	101	18.81%
Mamak	338	57	52	15.38%
Pursaklar	65	11	24	36.92%
Sincan	340	58	61	17.94%
Yenimahalle	382	65	69	18.06%
Total of the nine central district	3013	512	584	-
Others*	526	-	-	-
Overall	3539	512	584	-

*Others include 16 districts other than central districts of Ankara, namely Akyurt, Ayaş, Bala, Beypazarı, Çamlıdere, Çubuk, Elmadağ, Evren, Güdül, Haymana, Kahramankazan, Kalecik, Kızılcahamam, Nallıhan, Polatlı and Şereflikoçhisar

Herein, in spite of aiming to reach at least the number of 500 participants, totally 584 preschool teachers from nine districts participated in the present study with an approximate number to the specified percentages by each district.

3.2.1. Sample Characteristics

This section presents detailed information based on personal information about participant teachers of the pilot study and the main study (sex, district, age group, highest level of education completed, year of experience, and age group of children to be worked with), and specific information about recycling (number of residents, recycling opportunities at school and class in which they are working as well as where they currently live, membership status of their school to eco-school project, assessment of their school's recycling opportunities, type of place which they lived during their childhood, type of place in which they lived for the longest period of time, residential type in which they lived for the longest time during their childhood, existence of recycling opportunities in the place where their childhood passed, and monthly family income).

3.2.1.1. Background Information of Preschool Teachers in the Pilot Study

Prior to the main study, a pilot study was conducted with 294 preschool teachers currently working at public schools in nine central districts of Ankara, the capital city of Turkey. After receiving permission from the Provincial Directorate for National Education in Ankara, required data for the study was collected in consideration of convenience sampling strategy. Within the Spring Semester of the 2016-2017, particularly between the final half of May and first half of June, the relevant data were collected from the participants. Participants of the pilot study included 293 female preschool teachers (99.7%), and 1 male (.3%) preschool teacher. Among the participant preschool teachers, 34 teachers (11.6%) participated in the study from Altındağ, 50 of them (17%) participated from Çankaya, 46 of them (15.6%)

participated from Etimesgut, 10 of them 3.4%) participated from Gölbaşı, 43 of them (14.6%) participated from Keçiören, 27 of them (9.2%) participated from Mamak, 31 of them (10.5%) participated from Sincan, 22 of them (7.5%) participated from Pursaklar, and 31 of them (10.5%) participated from Yenimahalle districts. Furthermore, age of the teachers ranging from 21 to 59, was on average of M=35.8 years old. In particular, 6 of them (2%) were between the ages of 20 and 24, 48 of them (16.3%) were between the ages of 25 and 29, 86 of them (29.3%) were between the ages of 30 and 34, 70 of them (23.8%) were between the ages of 35 and 39, 38 of them (12.9%) were between the ages of 40 and 44, 23 of them (7.8%) were between the ages of 45 and 49, 13 of them were between the ages of 50 and 54, and 3 of them (1%) were between the ages of 55 and 59.

Distribution of the highest level of education participants of the pilot study completed indicated that 2 of them (.7%) graduated from vocational high school, 14 of them (4.8%) had an associate's degree (2-year program), 261 of them had a bachelor's degree, and 16 of them (5.4%) had post-graduate degree. Moreover, their year of experience varied from 1 to 35 with an average of M=12.17. Specifically, 33 of the participants of the pilot study (11.2%) had a teaching experience in this field between 1 and 5 years. 129 of them (43.9%) had a teaching experience in the field between 6 and 10 years. 50 teachers (17%), on the other hand, had a teaching experience between 11 and 15 years. Furthermore, 36 of the participants (12.2%) had a teaching experience between 16 and 20 years, and 30 of the participants (10.2) had a teaching experience between 20 and 30 years, whereas 10 of the participants (3.4%) had a teaching experience above 30 years. In addition, the participant teachers reported that 44 of them (15%) were teaching children with 36-48 months old, 137 of them (46.6%) were teaching children with 49-60 months old, and 111 of them (37.8%) were teaching children with 61-72 months old. Table 3.3 provides a holistic framework regarding the abovementioned characteristics of the participants of in the pilot study.

Table 3. 3

Background Information of the Participants in the Pilot Study

	Frequency (*f*)	Percentage (%)
Sex		
Male	1	.3
Female	293	99.7
District	Frequency (*f*)	Percentage (%)
Altındağ	34	11.6
Çankaya	50	17
Etimesgut	46	15.6
Gölbaşı	10	3.4
Keçiören	43	14.6
Mamak	27	9.2
Sincan	31	10.5
Pursaklar	22	7.5
Yenimahalle	31	10.5
Age group	Frequency (*f*)	Percentage (%)
20-24	6	2
25-29	48	16.3
30-34	86	29.3
35-39	70	23.8
40-44	38	12.9
45-49	23	7.8
50-54	13	4.4
55-59	3	1
Highest level of education completed	Frequency (*f*)	Percentage (%)
Vocational high school	2	.7
Associate's degree (2-year program)	14	4.8
Bachelor's degree	261	88.8
Postgraduate	16	5.4

Table 3.3 (cont'd)

Year of experience	Frequency (*f*)	Percentage (%)
1-5 years	33	11.2
6-10 years	129	43.9
11-15 years	50	17
16-20 years	36	12.2
20-30 years	30	10.2
Above 30 years	10	3.4
Age group of children to be worked with	Frequency (*f*)	Percentage (%)
36-48 months	44	15
49-60 months	137	46.6
61-72 months	111	37.8

**Note:* Missing values were not included in the table.

Besides the personal background information about the participants of the pilot study, recycling-related information was gathered from them via Demographic Information Questionnaire. In this regard, they were requested to provide information about number of residents at their home, recycling opportunities at school and class they work, as well as where they currently live, membership status of their school to eco-school project, assessment of their school's recycling opportunities, type of place in which they lived during their childhood, type of place in which they lived for the longest period of time, residential type in which they lived for the longest time during their childhood, existence of recycling opportunities in the place where their childhood passed, and monthly family income.

Responses obtained from the respondents showed that 159 of the participants (54.1%) had number of residents between one and three, 130 of them had number of residents between four and six, while 2 of them had seven or more than seven residents at their home. On the other hand, 147 of the participants (50%) had recycling opportunities at their class, while the other half of them did not have any recycling opportunities at their class. Moreover, 193 of the participants (65.6%) reported that they had recycling opportunities where they were currently live, while 101 of them (34.4) highlighted that they did not have any recycling opportunities where they currently live. In addition, the respondents were asked about membership status of their school to eco-school

project. Their answered showed that 55 of them (18.7%) were working at schools in which eco-school project was carried out, while 239 of them (81.3%) were not working at schools in which eco-school project was carried out. Furthermore, 265 of the participants (90.1%) had recycling opportunities at school they were working, whereas 29 of them (9.9%) did not have any recycling opportunities at school they were working. Correspondingly, 7 teachers (2.4%) reported that they had no idea about the issue. 40 out of them (13.6%) found their school's recycling opportunities as completely dissatisfied, 13 teachers (4.4%) found these opportunities as mostly dissatisfied, while 28 teachers found the opportunities as somewhat dissatisfied. On the other hand, 41 of the teachers (13.9%) reported that they were neither satisfied or dissatisfied about their school's recycling opportunities.

Also, 53 of the teachers (18%) found their school's recycling opportunities as somewhat satisfied, and 33 out of them (11.2%) found these opportunities as mostly satisfied, while 79 of them (26.9%) found the opportunities as completely satisfied. Furthermore, 202 of the teachers (68.7%) stated that type of place in which they lived during their childhood was urban areas, while 91 out of them (31%) stated that type of place in which they lived during their childhood was rural areas. More specifically, 14 of the respondents (4.8%) reported that type of place in which they lived for the longest period of time was village or town, and 78 of them (26.5%) reported that type of place in which they lived for the longest period of time was district, whereas most of the participants, 202 teachers, reported that type of place in which they lived for the longest period of time was city center. Moreover, residential type they lived for the longest time during their childhood was implied as separate house by 243 teachers (41.6%), while 339 teachers (58%) stated that they lived in apartment houses for the longest time during their childhood. However, it was reported that 54 of the teachers (18.4%) had recycling opportunities in the place where their childhood passed, while 239 of the teachers (81.3%) did not have recycling opportunities in the place where their childhood passed, as presented in Table 3.4.

Table 3. 4

Information related to Recycling

Number of residents	Frequency (f)	Percentage (%)
1-3	159	54.1
4-6	130	44.2
Above 7	2	.7
Recycling opportunities at class they work	Frequency (f)	Percentage (%)
Yes	147	50
No	147	50
Recycling opportunities where they currently live	Frequency (*f*)	Percentage (%)
Yes	193	65.6
No	101	34.4
Membership status of their school to eco-school project	Frequency (*f*)	Percentage (%)
Yes	55	18.7
No	239	81.3
Recycling opportunities at school they work	Frequency (*f*)	Percentage (%)
Yes	265	90.1
No	29	9.9
Assessment of their school's recycling opportunities	Frequency (*f*)	Percentage (%)
No idea	7	2.4
Completely dissatisfied	40	13.6
Mostly dissatisfied	13	4.4
Somewhat dissatisfied	28	9.5
Neither satisfied or dissatisfied	41	13.9
Somewhat satisfied	53	18.0
Mostly satisfied	33	11.2
Completely satisfied	79	26.9
Type of place in which they lived during their childhood	Frequency (*f*)	Percentage (%)
Urban	202	68.7
Rural	91	31.0
Type of place in which they lived for the longest period of time	Frequency (*f*)	Percentage (%)
Type of place in which they lived for the longest period of time	Frequency (*f*)	Percentage (%)
Village/town	14	4.8
District	78	26.5
City center	202	68.7

Table 3.4 (cont'd)

Residential type in which they lived for the longest time during their childhood	Frequency (*f*)	Percentage (%)
Separate house	243	41.6
Apartment house	339	58.0
Existence of recycling opportunities in the place where their childhood passed	Frequency (*f*)	Percentage (%)
Yes	54	18.4
No	239	81.3

**Note:* Missing values were not included in the table.

In addition to the aforementioned questions, monthly family income was addressed in the Demographic Information Questionnaire in relation to recycling-related information. Responses of the respondents showed that monthly family income of 2 participants (.7%) was 1000 Turkish Liras and less. 94 of the participants (32%) had a monthly family income between 1001 and 3000 Turkish Liras. Monthly family income of 152 participants was between 3001 and 5000 Turkish Liras, while 45 of them (15.3%) had a monthly family income 5001 Turkish Liras and more. Table 3.5 presents information obtained from the participants regarding their monthly family income.

Table 3. 5

Information related to Recycling (cont.)

Monthly family income	Frequency (*f*)	Percentage (%)
1000 TL and less	2	.7
1001 TL-3000 TL	94	32
3001 TL-5000 TL	152	51.7
5001 TL and more	45	15.3

**Note:* Missing values were not included in the table.

3.2.1.2. Background Information of Preschool Teachers in the Main Study

According to MoNE (2017), 98.4% the preschool teachers working at public schools were women in Ankara. As in the city-wide population, vast majority of the participant teachers working different districts of Ankara were women with the ratio of 99.7%

(n=582), whereas only .3% of all participants were male (n=2). Considering the distribution of the participant preschool teachers by districts, it was reported that 55 out of them (9.4%) participated in the study from Altındağ, 101 out of them (17.3%) participated from Çankaya, 90 out of them (15.4%) participated from Etimesgut, 31 out of them (5.3%) participated from Gölbaşı, 101 out of them (17.3%) participated from Keçiören, 52 out of them (8.9%) participated from Mamak, 61 out of them (10.4) participated from Sincan, 24 out of them (4.1%) participated from Pursaklar and 69 out of them (11.8%) participated from Yenimahalle. Moreover, age of the teachers, ranging from 21 to 63, was on average of M=36.37 years old. More specifically, as presented in the Table 3.3, 12 out of them (2.1%) were between the ages of 20 and 24, 68 out of them (11.6%) were between the ages of 25 and 29, 182 out of them (31.2%) were between the ages of 30 and 34, 153 out of them (26.2%) were between the ages of 35 and 39, 77 out of them (13.2%) were between the ages of 40 and 44, 62 out of them (10.6%) were between the ages of 45 and 49, 20 out of them (3.4%) were between the ages of 50 and 54, 3 out of them (.5%) were between the ages of 55 and 59 and 2 out of them (.3%) were aged above 60 years old, while 5 teachers (.9%) did not specify their ages.

Distribution of the highest level of education the participant preschool teachers completed showed that 2 of them (.3%) graduated from vocational high schools, 24 out of them (4.1%) graduated from associate's degree (2-year program) 515 out of them (88.2%) completed a bachelor's degree and 43 out of them (7.4%) completed a postgraduate degree. Besides, participant teachers' year of experience ranged from 1 to 34 with an average of M=12.75 years. In particular, 67 out of them (11.5%) had a teaching experience between 1 and 5 years, 222 out of them (38%) had a teaching experience between 6 and 10 years, 123 out of them (21.1%) had a teaching experience between 11 and 15 years, 71 out of them (12.2%) had a teaching experience between 16 and 20 years, 86 out of them (14.7%) had a teaching experience between 20 and 30 years, and 10 out of them (1.7%) had a teaching experience above 30 years, whereas

5 out of them (.9%) did not specify their years of teaching experience. Moreover, 69 out of the participant teachers (11.8%) have been providing teaching for children with 36-48 month of age, 300 out of them (51.4%) have been providing teaching for children with 49-60 month of age and 208 out of them (35.6%) have been providing teaching for children with 61-72 month of age, while seven out of them (1.2%) did not provide any information regarding which age group they have been teaching. Table 3.6 provides a holistic framework in this regard.

Table 3. 6

Background Information of the Participants in the Main Study

Sex	Frequency (*f*)	Percentage (%)
Male	2	.3
Female	582	99.7
District	Frequency (*f*)	Percentage (%)
Altındağ	55	9.4
Çankaya	101	17.3
Etimesgut	90	15.4
Gölbaşı	31	5.3
Keçiören	101	17.3
Mamak	52	8.9
Sincan	61	10.4
Pursaklar	24	4.1
Yenimahalle	69	11.8
Age group	Frequency (*f*)	Percentage (%)
20-24	12	2.1
25-29	68	11.6
30-34	182	31.2
35-39	153	26.2
40-44	77	13.2
45-49	62	10.6
50-54	20	3.4
55-59	3	.5
Above 60	2	.3
Highest level of education completed	Frequency (*f*)	Percentage (%)
Vocational high school	2	.3
Associate's degree (2-year program)	24	4.1
Bachelor's degree	515	88.2
Postgraduate	43	7.4

Table 3.6 (cont'd)

Year of experience	Frequency (*f*)	Percentage (%)
1-5 years	67	11.5
6-10 years	222	38
11-15 years	123	21.1
16-20 years	71	12.2
20-30 years	86	14.7
Above 30 years	10	1.7
Age group of children to be worked with	Frequency (*f*)	Percentage (%)
36-48 months	69	11.8
49-60 months	300	51.4
61-72 months	208	35.6

**Note:* Missing values were not included in the table.

Aside from personal information of the participant preschool teachers, specific information related to recycling were addressed to respondents by means of demographic information form. When specific information about recycling was examined, 11 demographic information (number of residents, recycling opportunities at school and class they work, as well as where they currently live, membership status of their school to eco-school project, assessment of their school's recycling opportunities, type of place in which they lived during their childhood, type of place in which they lived for the longest period of time, residential type in which they lived for the longest time during their childhood, existence of recycling opportunities in the place where their childhood passed, and monthly family income) contributed to explicate the situation.

First of all, the participants were asked about number of residents at their home. 304 out of the participants (52.1%) stated that number of residents at their home ranged from 1 to 3, whereas 271 out of them (46.4) stated that number of residents at their home ranged from 4 to 6. Subsequently, 3 out of the participants (0.5%) signified that number of residents at their home above 7, while 6 participant teachers (1%) did not remark number of participants at their home. Furthermore, the respondents were asked about whether they had recycling opportunities at class they work. 266 out of the

participants (45.5%) had recycling opportunities at their class, while 318 out of them (54.5%) did not have any opportunities to engage in recycling at their class. In addition to the questions regarding their recycling opportunities at their workplaces, they were asked about recycling opportunities where they currently live. In this respect, 394 out of the preschool teachers (67.5%) indicated that they had recycling opportunities where they currently live, whereas 183 out of them (31.3%) did not have those opportunities where they currently live. On the other hand, 7 respondents (1.2%) did not specified any information about whether they had recycling opportunities where they currently live, or not. Another question addressed in the questionnaire was related to membership status of their school to eco-school project. Answers of the question showed that schools where 64 out of the participants (11%) have been working had a current membership of eco-school project, on the other hand, schools where 520 out of the participants (89%) have been working did not have a membership of this project. Furthermore, the respondents were asked about whether they had recycling opportunities at school, or not. While 456 out of them (78.1%) stated that they had opportunities to recycle at their school, only 128 out of them (21.9%) reported that they did not have recycling opportunities at their school. Concordantly, participant teachers were requested to assess recycling opportunities offered to them at their schools. 9 respondents (1.5%) asserted that they had no idea about how many opportunities their school offered to them regarding recycling, 115 respondents (19.7%) stated that they were completely dissatisfied about recycling opportunities offered to them at their schools, 33 respondents (5.7%) reported these opportunities as mostly dissatisfied, 56 respondents (9.6%) reported the opportunities as somewhat dissatisfied, while 81 respondents (13.9%) found recycling opportunities offered to them at their school neither satisfied or dissatisfied. Besides that, 96 respondents (16.4%) asserted that their schools offered somewhat satisfied recycling opportunities to them, 85 respondents (14.6%) assessed such opportunities as mostly satisfied, whereas 100 respondents (17.1%) reported the opportunities as completely satisfied. 9

respondents (1.5%), however, did not provide any information about recycling opportunities offered to them at their schools.

Other question asked to the participants by the questionnaire was related to type of place in which they lived during their childhood. 398 respondents (68.2%) stated urban areas as a living place during their childhood, 186 respondents (31.8%) stated rural areas as a living place during their childhood. When it comes to type of place in which they lived for the longest period of time, 30 respondents (5.1%) asserted village/town as where they lived for the longest period of time, 136 respondents (23.3%) indicated districts as where they lived for the longest period of time, and 418 respondents (71.6%) stated city centers on this point. When residential type in which they lived for the longest period of time during their childhood was asked to the respondents, 243 out of them (41.6%) lived at separate houses, 339 out of them (58%) lived at apartment houses, whereas 2 participants (0.3%) did not provide any information in this topic. Later on, existence of recycling opportunities in the place where their childhood passed was asked to the participants. While 133 out of them (22.8%) stated that they had recycling opportunities in the place where their childhood passed, 450 out of them (77.1%) stated that they did not have recycling opportunities in the place where their childhood passed. One participant (0.2%), did not give any information about whether s/he had recycling opportunities in the place where his or her childhood passed. The abovementioned information about the participants are presented in the Table 3.7.

Table 3. 7

Information related to Recycling

Number of residents	Frequency (*f*)	Percentage (%)
1-3	304	52.1
4-6	271	46.4
Above 7	3	.5
Recycling opportunities at your class	Frequency (*f*)	Percentage (%)
Yes	266	45.5
No	318	54.5

Table 3.7 (cont'd)

Recycling opportunities where they currently live	Frequency (*f*)	Percentage (%)
Yes	394	67,5
No	183	31,3
Membership status of their school to eco-school project	Frequency (*f*)	Percentage (%)
Yes	64	11
No	520	89
Recycling opportunities at your school	Frequency (*f*)	Percentage (%)
Yes	456	78.1
No	128	21.9
Assessment of their school's recycling opportunities	Frequency (*f*)	Percentage (%)
No idea	9	1.5
Completely dissatisfied	115	19.7
Mostly dissatisfied	33	5.7
Somewhat dissatisfied	56	9.6
Neither satisfied or dissatisfied	81	13.9
Somewhat satisfied	96	16.4
Mostly satisfied	85	14.6
Completely satisfied	100	17.1
Type of place in which they lived during their childhood	Frequency (*f*)	Percentage (%)
Urban	398	68.2
Rural	186	31.8
Type of place in which they lived for the longest period of time	Frequency (*f*)	Percentage (%)
Village/town	30	5.1
District	136	23.3
City center	418	71.6
Residential type in which they lived for the longest time during their childhood	Frequency (*f*)	Percentage (%)
Separate house	243	41.6
Apartment house	339	58.0
Existence of recycling opportunities in the place where their childhood passed	Frequency (*f*)	Percentage (%)
Yes	133	22.8
No	450	77.1

**Note:* Missing values were not included in the table.

Another question about recycling was related to monthly family income of the participant teachers toward recycling. For the former, monthly family income of 2 respondents (.3%) was equal to or less than 1000 Turkish Liras (TL). On the other hand, 33 respondents (5.7%) had a monthly family income ranging from 1001 TL to 3000 TL. 184 respondents (31.5%) had a monthly family income ranging from 3001 TL to 5000 TL, whereas 361 respondents (61.8%) had a monthly family income equal to or more than 5001 TL. In addition, 4 respondents (0.7%) did not give any information about their monthly family income. Relevant information regarding monthly family income and general attitudes of the participant teachers toward recycling was indicated in the Table 3.8 below.

Table 3. 8

Information related to Recycling (cont.)

	Frequency (*f*)	Percentage (%)
Monthly family income		
1000 TL and less	2	.3
1001 TL-3000 TL	33	5.7
3001 TL-5000 TL	184	31.5
5001 TL and more	361	61.8

**Note:* Missing values were not included in the table.

3.2.1.3. External Validity

External validity has been defined as to what extent findings of a research study enable researchers to draw conclusions based on the generalizations of these results (Fraenkel, Wallen & Hyun, 2012). Herein, sampling technique to be used provides researchers with advantage of making generalizations from a group of sample to a population (Fraenkel & Wallen, 2006). In this respect, convenient sampling as a nonrandom sampling technique was utilized in the current study, thus this can pose a problem for generalizability of the research findings. On the other hand, Fraenkel and Wallen (2006) stated that researchers ought to provide a clear description of sample

characteristics in a study unless gathering random data is practical or applicable for them. Therefore, for the purpose of external validity for this study, characteristics of the participant preschool teachers such as gender, age group, year of service, and socioeconomic status were obtained and described in detail in earlier sections. In this sense, ecological generalizability rather than population generalizability has been stressed by Fraenkel and Wallen (2006) as the most appropriate strategy for making generalizations while using nonrandom sampling techniques in a study. Ecological generalizability has been defined as to what extent results of a research study can be generalized to the population with similar settings and conditions (Fraenkel & Wallen, 2006). Since the study was conducted with preschool teachers working at public schools in nine districts of one of the metropole cities of Turkey and its capital city, Ankara, it was expected that they were working in similar settings under similar conditions with similar experiences and opportunities regarding recycling in a correspondence with the population. In light of these strategies, it can be considered that threats to external validity were sufficiently controlled to generalize the results of the present study to the corresponding population.

3.3. Instrumentation

In the present study, two instruments were employed to gather the relevant data which are Demographic Information Questionnaire and Recycling Behavior Scale for Preschool Teachers including the adapted versions of Recycling Behavior, Attitude and Values Scale for Sustainable Campus (Tekkaya, Kılıç & Şahin, 2011a), and Recycling Survey Questionnaire (Gadiraju, 2016). In this part, a detailed information about the instruments used in the current study and results of the pilot study in line with reliability and validity issues are thoroughly elucidated. Herein, Table 3.9 provides a general framework about the instruments, their sources and relevant variables used within the study.

Table 3. 9

Instruments, Sources and Variables

Instruments	Sources	Relevant variables
Demographic Information Questionnaire	It was developed by the researcher for the study	Personal information about participants (gender, district, age group, highest level of education completed, year of experience, age group of children) Information related to recycling (number of residents, recycling opportunities at their school and their class, as well as where they currently live, membership status of their school to eco-school project, assessment of their school's recycling opportunities, type of place in which they lived during their childhood, type of place in which they lived for the longest period of time, residential type in which they lived for the longest period of time during their childhood, existence of recycling opportunities in the place where their childhood passed, monthly family income)
Recycling Behavior Scale for Preschool Teachers	Recycling Behavior, Attitude and Values Scale for Sustainable Campus (Tekkaya, Kılıç & Şahin, 2011)	TPB variables ▪ Attitude (behavioral beliefs & evaluations of behavioral outcome) ▪ Subjective norm (normative beliefs & motivation to comply) ▪ Perceived behavioral control (control beliefs & control belief strength) ▪ Behavioral intention ▪ Current Behavior ▪ Past behavior
	Recycling Survey Questionnaire (Gadiraju, 2016)	▪ Moral norm ▪ Convenience

3.3.1. Demographic Information Questionnaire

Demographic Information Questionnaire was developed by the researchers in order to obtain personal information about the participant preschool teachers and recycling-based information about them.

3.3.2. Recycling Behavior Scale for Preschool Teachers

Recycling Behavior Scale for Preschool Teachers included particular parts from the following scales: Recycling Behavior, Attitude and Values Scale for Sustainable Campus (Tekkaya, Kılıç & Şahin, 2011), and Recycling Survey Questionnaire (Gadiraju, 2016). For this reason, it was critical to have a detailed information about each scale so as to have a clear understanding of the instrument, the Recycling Behavior Scale for Preschool Teachers.

3.3.2.1. Recycling Behavior, Attitude and Values Scale for Sustainable Campus

Recycling Behavior, Attitude and Values Scale for Sustainable Campus was originally developed by Tekkaya and her colleagues (2011) in conformity with the extensive literature regarding recycling and previous applications of the TPB in the relevant literature. This scale was developed in Turkish, and it targeted 232 undergraduate students in elementary education in Ankara, Turkey so as to explain factors influencing their recycling behaviors through the TPB framework. As it was recommended by Ajzen (1991) for studies including the TPB, this scale is a seven-point Likert scale rated from 1 (strongly disagree) to 7 (strongly agree). It contains 12 dimensions, namely attitude toward behavior, behavioral belief, evaluation of behavioral outcome, subjective norm, normative belief, motivation to comply, perceived behavioral control, control belief, control belief strength, behavioral intention, past recycling behavior and current behavior. First version of the scale consisted of 19 items for attitude, 14 items for behavioral beliefs, 14 items for evaluation of behavioral outcomes, two items for subjective norm, 10 items for normative beliefs, 10 items for

motivation to comply, four items for perceived behavioral control, 10 items for control beliefs, 10 items for control belief strength, three items for behavioral intention, six items for current recycling behavior, and six items for past behavior. After subsequent analyses, this scale was structured as nine items for attitude, six items for behavioral beliefs, six items for evaluation of behavioral outcomes, two items for subjective norm, four items for normative beliefs, four items for motivation to comply, three items for perceived behavioral control, five items for control beliefs, five items for power of control, two items for behavioral intention, five items for past recycling behavior, and five items for current recycling behavior. For subjective norm subscale including two items and behavioral intention subscale including three items correlation was calculated to determine reliability of these scales. Moreover, Cronbach's alpha value for each dimension the scale was found α= .87 for attitude, α= .93 for behavioral beliefs, α= .95 for evaluation of behavioral outcomes, r= .67 for subjective norm, α= .89 for normative beliefs, α= .92 for motivation to comply, α= .72 for perceived behavioral control, α= .76 for control beliefs, α= .92 for control belief strength, r= .93 for behavioral intention, and α= .90 for recycling behavior. Since reliability value for each construct was above α= .70, a satisfactory value for a reliable scale (Pallant, 2007), these values were found as acceptable by the developers of the scale. To sum up, the developers of the scale highlighted that it could be utilized as a valid and reliable instrument in future studies.

3.3.2.2. Recycling Survey Questionnaire

Recycling Survey Questionnaire was developed by Gadiraju (2016) by centering on the extant literature about recycling and the TPB. Original language of the scale was English, and it examined factors affecting recycling behavior of 172 undergraduate students in the Department of Mass Communications. In consistence with the recommendations of Ajzen (1991), 34 items included in the scale were ranged from 1 (strongly disagree) to 7 (strongly agree). In addition, this scale had nine dimensions, namely attitude, subjective norm, perceived behavioral control, past behavior,

behavioral intention, moral norm, knowledge of consequences, inconvenience, and extra comments. As a result of reliability analyses, Cronbach's alpha value was found for attitude subscale as α= .96, for perceived behavioral control subscale as α= .86 for, for behavioral intention subscale as r= .85, for moral norm subscale as α= .88, for convenience subscale as α= .98, for subjective norm as r= .63, for knowledge of consequences subscale as r=.64. Moreover, this instrument included three items for attitude subscale, three items for subjective norm subscale, five items for perceived behavioral control subscale, one item for past behavior, two items for behavioral intention, five items for moral norm, three items for knowledge of consequence, and three items for convenience.

3.3.3. Adaptation of the Instruments

As indicated earlier, there were mainly two instruments utilized in the current research in order to investigate factors influencing recycling behaviors of preschool teachers in conjunction with the TPB. One of them was Demographic Information Questionnaire developed in an attempt to gather their personal information and recycling-based information. Each item included in the questionnaire was selected based on the pertinent and comprehensive recycling literature and prior TPB applications. After that, each item in the questionnaire was arranged to fit the field of education in order to be utilized in the pilot study.

Other instrument used in the present study was Recycling Behavior Scale for Preschool Teachers. Hereinbefore, this scale was the combination of specific subscales taken from Recycling Behavior, Attitude and Values Scale for Sustainable Campus (Tekkaya, Kılıç & Şahin, 2011), and Recycling Survey Questionnaire (Gadiraju, 2016). Required permissions for each scale were asked from one of their developers via e-mail.

Recycling-related items constituted with the TPB were taken from Recycling Behavior, Attitude and Values Scale for Sustainable Campus (Tekkaya, Kılıç & Şahin, 2011). In general, 56 items about recycling developed by Tekkaya, Kılıç and Şahin (2011) in accordance with the TPB variables were utilized in the current study. The name of the TPB variables and number of items related to each variable were as follows: nine items for attitude, six items for behavioral beliefs, six items for evaluations of behavioral outcomes, two items for subjective norm, four items for normative beliefs, four items for motivation to comply, three items for perceived behavioral control, five items for control beliefs, five items for control belief strength, two items for behavioral intention, five items for past behavior, and five items for current behavior. In order to make the items more appropriate and meaningful for preschool teachers, two experts from the Department of Early Childhood Education in different universities and the advisor of this research examined the items in terms of their appropriateness for preschool teachers. In parallel with their recommendations, the researcher of this study made minor revisions on these items. For instance, one of the items in the first version of the scale implied that ‘‘Regulations on our campus make my engagement in recycling easier.’’. This item was rearranged as ‘‘Regulations at my school make my engagement in recycling easier.’’ Similar alterations were made for few items.

Taking insight from the previous studies concentrating on recycling within the frame of the TPB, 3 additional variables were decided to be integrated in this study. 2 of these variables which were moral norm and convenience were included in the study by means of Recycling Survey Questionnaire developed by Gadiraju (2016). In this regard, items in each subscale were carefully translated into Turkish by the researcher under the supervision of the advisor of this study. Moreover, two experts graduated from the Department of English Language and Literature who have an advanced knowledge of English and Turkish translated the scale. Two of the translators showed a 100% agreement upon the scale. In light of their translations, the researcher made

several alterations over the items. Subsequently, the Turkish version of the Recycling Survey Questionnaire was translated back to English by an expert from the English Language Teaching from the Department of Foreign Language Education at Middle East Technical University (METU) with an excellent knowledge of English and Turkish. Slight differences between the first and second versions of the scale were centered by the researcher and the advisor of the study. In consideration of the recommendations of the experts, sentence structure and wordings of three items were revised in order to reflect their meanings as clear as possible. In this way, the translated scale was adapted closely allied with Turkish context including social, educational, and cultural aspects, and the it took its last version to be used in the pilot study (See Table 3.10).

Table 3.10

Dimension, Description, and Example Item regarding the Constructs

Dimension	Description	Example item
Attitude toward behavior	It refers to preschool teachers' positive or negative evaluations of recycling.	''For me, recycling is necessary (7) unnecessary (1).''
Behavioral belief	It refers to preschool teachers' beliefs about the consequences of recycling. It is determined by the multiplication of each behavioral belief referent with evaluation of the corresponding behavioral outcome.	''If I recycle, I would do something beneficial for society.'' X ''Doing something beneficial for society is important for me.''
Subjective norms	It refers to the social pressure perceived by the preschool teachers with respect to recycling.	''People I value their opinions support me to recycle.''
Normative belief	It refers to preschool teachers' beliefs about approval or disapproval of significant other people in regard to recycling. It is determined by the multiplication of each normative belief referent with the motivation to comply with the corresponding referent.	''School administrators expect me to recycle.'' X ''School administrators' expectations about my recycling behavior are important for me.''

Table 3.10 (cont'd)

Dimension	Description	Example item
Perceived behavioral control	It refers to ease of difficulty of recycling perceived by the preschool teachers.	''It is under my control to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months.''
Control belief	It refers to preschool teachers' beliefs about the existence of essential parameters for recycling. It is determined by the multiplication of each control belief referent with the power of control over the corresponding referent.	''I know which wastes are recyclable.'' X ''Knowing which wastes are recyclable contributes me to recycle.''
Behavioral intention	It refers to the likelihood of recycling evaluated by the preschool teachers.	''I will try to recycle the recyclable materials (paper, glass, plastic, etc.).''
Behavior	Recycling is the proper way of disintegrating the collected wastes into raw materials to be used to produce new output products, to conserve potentially beneficial resources and to lessen the amount of solid wastes in landfills.	''I always recycled aluminum box recently.''
Moral norms	It refers to preschool teachers' own beliefs and demand for exhibiting recycling behavior.	''I feel guilty unless I do not recycle my wastes.''
Convenience	It refers to how much convenient recycling is for preschool teachers.	''I believe that recycling is practical.''
Past behavior	It refers to recycling behavior which took place in the last year.	''I always recycled aluminum box over the last year.''

3.3.4. Pilot Study

Recycling Behavior Scale for Preschool Teachers utilized in the pilot study included 64 items as nine items for attitude, six items for behavioral beliefs, six items for evaluation of behavioral outcome, two items for subjective norm, four items for normative beliefs, four items for motivation to comply, three items for perceived behavioral control, five items for control beliefs, five items for control belief strength, two items for behavioral intention, three items for convenience, five items for moral norm, five items for past recycling behavior, and five items for current recycling behavior. Distribution of the items over the scale used in the pilot study was presented in the Table 3.11 below.

Table 3. 11

Distribution of the Recycling Behavior Scale for Preschool Teachers in the Pilot Study

Components	Number of Items
Attitude	9
Behavioral beliefs	6
Evaluation of behavioral outcomes	6
Subjective norm	2
Normative beliefs	4
Motivation to comply	4
Perceived behavioral control	3
Control beliefs	5
Control belief strength	5
Behavioral Intention	2
Convenience	3
Moral Norm	5
Past recycling behavior	5
Current recycling behavior	5
Total	64

As mentioned in the Chapter I, according to the TPB, psychological constructs of the theory are determined by corresponding salient beliefs. More specifically, attitude

toward a behavior is determined by behavioral beliefs which refers to the perceived advantages and disadvantages about acting, and evaluation of possible outcomes (Ajzen & Fishbein, 1980). Since each behavioral belief (b) is derived from a corresponding evaluation of outcome (e), each belief strength and the relevant evaluation of outcome are multiplied so as to have a value about the extent of attitude toward a behavior (ATT). Afterwards, the obtained values are summed for each item (i) (Ajzen, 2005, p.124), as presented in the following equation:

$$ATT = \Sigma b_i e_i$$

Moreover, the TPB highlights that subjective norms are predicted by normative beliefs which are the perceived social constraint about whether an individual should perform a behavior or not, and the motivation to comply with the corresponding belief (Ajzen & Fishbein, 1980). According to the theory, each strength of normative belief (n) is multiplied with the relevant motivation to comply (m) with the corresponding belief based on the assumption that each normative belief is directly in relation with a corresponding individual motivation of comply with the particular belief (Ajzen, 1988). For this reason, the obtained values are summed for each item (i) to calculate the target value for subjective norms about the certain behavior (SN), as indicated in the following equation:

$$SN = \Sigma n_i m_i$$

In addition, the TPB emphasized that perceived behavioral control is determined by the corresponding control beliefs about the existence of factors which can ease or obstruct the exhibition of a behavior (Ajzen, 1991). Since each of the control beliefs (c) is directly related to a corresponding power of control (p), each strength of control beliefs is multiplied with the relevant power of control over the behavior so as to obtain

a value about perceived behavioral control (PBC). Then, each obtained value for each item (i) is summed (Ajzen, 1991), as presented in the following equation:

$$PBC = \Sigma c_i p_i$$

According to Ajzen (2002), the measurements indicated in Table 3.10 cannot be directly observed, but they can be measured through observable responses. To specify, attitude toward a specific behavior, subjective norms regarding the behavior, perceived control over the behavior, and intention to perform the behavior are the direct measurements of the theory, whereas salient beliefs which are the antecedents of attitude toward a behavior, subjective norms regarding the behavior, and perceived behavioral control over the behavior are the indirect measurements of the theory. For this reason, in order to determine these salient beliefs behavioral belief items ought to be multiplied with evaluation of behavioral outcomes, normative belief items ought to be multiplied with motivation to comply items, and control belief items ought to be multiplied with power of control items to obtain scores for the antecedents of the direct constructs. On the other hand, this calculation strategy is not administered to the other constructs than the aforementioned.

3.3.5. Validity of Recycling Behavior Scale for Preschool Teachers

Validity points out the extent to which an instrument enables researchers to draw acceptable, reasonable, useful and correct conclusions (Fraenkel, Wallen & Hyun, 2012). Since a valid instrument serves for making accurate measurements, it is critical to choose a proper measurement tool in a research study (Fraenkel, Wallen & Hyun, 2012). In other words, a valid instrument includes data which not only is directly associated with the aim of the study but also serves this aim.

There are important points to take into consideration while deciding whether an instrument is valid or invalid to use in data collection process. In other words, various types of evidences, particularly content-related validity, criterion-related validity, and construct-related validity, are needed in data collection process in order for the researchers to make decisions about whether the instruments they use are valid or not. Herein, content-related validity centers on whether an instrument contains items within itself in a clear way (Fraenkel, Wallen & Hyun, 2012). In this respect, its content and format issues are considered in favor of the clarity of printed materials, the font size used in texts, the usage of a proper language in texts and the usage of intelligible and unambiguous directions within texts. In parallel with these points, an instrument with content validity should be able to provide appropriate answers for questions about to what extent the instrument is pertinent with the content, to what extent the instrument is thorough, to what extent the content of the instrument is represented by either items or questions included in the instrument, to what extent the format of the instrument allows researchers to make items or questions understandable for respondents, and how much not only the content of the instrument but also its format are parallel should be in concordance with both the theoretical definition of the concept and the selected issues to be measured (Fraenkel, Wallen & Hyun, 2012). On the one hand, criterion-related validity focuses on how much scores which are gathered utilizing the instruments are in correspondence with scores which are gathered utilizing one or more than one instrument or criterion (Fraenkel, Wallen & Hyun, 2012). On this basis, the degree of the relationship between them and to what extent these scores allow researchers to make relevant future predictions are the main points to assess an instrument in terms of criterion-related evidences (Fraenkel, Wallen & Hyun, 2012). On the other hand, construct-related validity points out "the nature of psychological construct or characteristic being measured by the instrument" (Fraenkel, Wallen & Hyun, 2012, p.148). In the adaptation process of the Recycling Behavior Scale for Preschool Teachers, not only content-related evidence but also construct-

related evidence was taken into account in order to utilize a valid instrument in data collection process of the current study.

According to Frankel, Wallen and Hyun (2012), asking opinion of someone who have enough knowledge of what a researcher intends to measure is one of the most frequently used way of obtaining content-related evidences regarding validity. As earlier indicated in the Section 3.3.2.4, several experts evaluated the appropriateness of language and format of the scale in consideration of social, educational and cultural aspects while adapting the scale. Immediately after the translation process, the researcher and the advisor of the thesis revised some items in order to make their meaning more understandable for preschool teachers. The scale which was adapted in accordance with Turkish context in terms of social, educational, and cultural aspects took its final version, as given Demographic Information Questionnaire in Appendix A, and Recycling Behavior Scale for Preschool Teachers in Appendix B.

In order to acquire construct-related evidence of validity, factor analysis was employed on the obtained data utilizing the Recycling Behavior Scale for Preschool Teachers. Factor analysis refers to a statistical analysis which allows researchers to sum up large piles of variables under smaller and coherent piles of factors by considering correlations among the variables (Pallant, 2011). Hence, one can infer that factor analysis provides researchers with pilling up the variables or items which have the strongest inter-correlation with others by transforming a wide range of related data into a more manageable number of data. Herein, there are two major types of factor analysis, which are exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The former refers to exploring and summarizing the obtained data in terms of to what degree they have an interrelationship with each other, on the other hand, the latter refers to verify particular pre-developed hypotheses or a theory based on the hidden structure lying behind several components (Pallant, 2011). Due to the fact that some parts in the present scale were adapted from a different culture to Turkish culture

and the scale would be adapted to a different sample group, EFA was employed in the early stages of the factor analysis and afterwards CFA was conducted to satisfy construct validity of the Recycling Behavior Scale for Preschool Teachers based on the relevant evidences.

3.3.5.1. Exploratory Factor Analysis

In order to validate the Recycling Behavior Scale for Preschool Teachers, item analysis and factor analysis were employed since each factor or variable was measured by means of multi-item constructs (Lee, 2001). In the EFA, item-total correlations of each construct, namely attitude (ATT), behavioral beliefs (Bb), subjective norm (SN), normative beliefs (Nb), perceived behavioral control (PBC), control beliefs (Cb), behavioral intention (INT), past behavior (PAST), current behavior (CUR), convenience (CON) and moral norm (MOR) were examined. According to Pallant (2007), the corrected item-total correlation values are evidences for how much each single item shows a correlation with the total score. Item-total correlation values for each construct are indicated in Table 3.12.

Table 3. 12

Item-Total Statistics for Recycling Behavior Scale for Preschool Teachers

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ATT1	54.4811	13.340	.767	.911
ATT2	54.4811	12.713	.801	.907
ATT3	54.4605	13.001	.819	.907
ATT4	54.4983	12.706	.787	.908
ATT5	54.6357	12.274	.551	.936
ATT6	54.5258	12.816	.754	.910
ATT7	54.4708	13.119	.772	.910
ATT8	54.4639	13.070	.820	.907
ATT9	54.4296	13.929	.637	.918

Table 3. 12 (cont'd)

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Bb1	236.2500	326.704	.653	.855
Bb2	235.8014	336.881	.769	.836
Bb3	235.2705	356.562	.833	.836
Bb4	235.3630	346.500	.830	.832
Bb5	235.3870	357.214	.725	.846
Bb6	237.6986	299.222	.538	.905
SN1	5.4932	1.657	.794	.794
SN2	5.6293	1.388	.794	.794
MOR1	24.6918	13.142	.406	.770
MOR2	25.0788	10.506	.559	.720
MOR3	25.3322	9.109	.679	.673
MOR4	25.5651	8.260	.677	.678
MOR5	24.7158	12.720	.441	.760
Nb1	95.9418	1803.175	.816	.848
Nb2	96.2397	1821.138	.831	.842
Nb3	99.9075	1784.332	.798	.855
Nb4	89.9897	2189.323	.642	.909
PBC1	12.2415	1.378	.576	.681
PBC2	12.0782	1.540	.665	.599
PBC3	12.4082	1.416	.528	.739
Cb1	156.1126	1197.039	.747	.743
Cb2	154.5666	1176.452	.682	.752
Cb3	159.5666	1031.835	.684	.745
Cb4	162.2765	994.523	.559	.806
Cb5	158.3993	1365.871	.435	.816
INT1	5.7279	1.216	.814	.814
INT2	5.7551	1.114	.814	.814
PAST1	20.4716	36.065	.464	.777
PAST2	21.2092	29.867	.702	.703
PAST3	21.1773	30.018	.657	.716
PAST4	20.8723	32.446	.486	.770
PAST5	22.6099	25.563	.579	.756
CUR1	20.2979	37.256	.522	.779
CUR2	21.0851	31.003	.713	.717
CUR3	20.9220	32.414	.638	.741
CUR4	20.6489	34.207	.501	.782
CUR5	22.4929	27.425	.589	.770

Table 3.12 (cont'd)

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
MOR1	24.6918	13.142	.406	.770
MOR2	25.0788	10.506	.559	.720
MOR3	25.3322	9.109	.679	.673
MOR4	25.5651	8.260	.677	.678
MOR5	24.7158	12.720	.441	.760

*Note: EFA was separately ran for each scale. CON=Convenience, ATT=Attitude, SN=Subjective norm, MOR=Moral norm, PBC=Perceived behavioral control, INT=Intention, PAST=Past recycling behavior, CUR=Current recycling behavior, Bb=Behavioral belief, Nb=Normative belief, and Cb=Control belief

Corrected item-total correlation values dropping below .3 are a sign which points out that the item is intended to measure any other feature unlike other items in the scale (Pallant, 2007). As indicated in the Table 3.11 above, all items have a higher corrected item-total correlation value than .3.

In order to have a clear understanding of construct validity of the Recycling Behavior Scale for Preschool Teachers, which refers to the extent of which several attempts to measure same characteristic with an agreement by item-total correlation (Lee, 2001), and dimensionality in the relationship among items and variables (Abdul-Halim & Che-Ha, 2009), exploratory factor analysis was performed to each construct handled in the study. According to Hair et al. (2006), there are several assumptions which should be validated to rationalize the application of EFA. The first assumption to consider in factor analysis is whether sample size is larger enough for assessing the appropriateness of the data for the pilot study. In this respect, Tabachnick and Fidell (2007) recommended that there should be at least 300 cases or participants for factor analysis. On the other hand, they emphasized that a smaller sample size is sufficient only if a number of factors have strong correlations. Furthermore, Cattell (1978) suggested that the ratio of sample size to the number of items in a scale should be ranged from 3 to 6. In other words, the number of participants should be at least 3

times of the number of items to 6 times of the number of items. In the pilot study there were 294 participants who were expected to respond 64 items. For this reason, the pilot study had a sufficient number of participants. Moreover, MacCallum, Widaman, Zhang and Hong (1999) discussed that if variables have values for communalities around .5 with a sample size between 100 and 200, the sample size is proper for performing factor analysis. As showed in the Table 3.13 below, there were three items (ATT5, Bb6, MOR1) with a lower communality than 0.5. Since this value was quite close to the boundary point 0.5, and the sample size of the pilot study data was found as a sufficient number for factor analysis (N=294), no item was eliminated from the study. For this reason, the first assumption regarding optimum sample size for EFA was justified in the current study.

Table 3. 13

Communalities for the Recycling Behavior Scale for Preschool Teachers

	Initial	Extraction
ATT1	1.000	.719
ATT2	1.000	.681
ATT3	1.000	.776
ATT4	1.000	.732
ATT5	1.000	.443
ATT6	1.000	.693
ATT7	1.000	.711
ATT8	1.000	.756
ATT9	1.000	.634
Bb1	1.000	.607
Bb2	1.000	.742
Bb3	1.000	.836
Bb4	1.000	.865
Bb5	1.000	.700
Bb6	1.000	.466
SN1	1.000	.808
SN2	1.000	.755
Nb1	1.000	.785
Nb2	1.000	.831
Nb3	1.000	.788
Nb4	1.000	.671

Table 3.13 (cont'd)

	Initial	Extraction
PBC1	1.000	.625
PBC2	1.000	.694
PBC3	1.000	.619
Cb1	1.000	.775
Cb2	1.000	.701
Cb3	1.000	.694
Cb4	1.000	.577
Cb5	1.000	.525
INT1	1.000	.711
INT2	1.000	.665
PAST1	1.000	.798
PAST2	1.000	.702
PAST3	1.000	.735
PAST4	1.000	.829
PAST5	1.000	.734
CUR1	1.000	.789
CUR2	1.000	.727
CUR3	1.000	.741
CUR4	1.000	.902
CUR5	1.000	.734
CON1	1.000	.725
CON2	1.000	.681
CON3	1.000	.686
MOR1	1.000	.424
MOR2	1.000	.572
MOR3	1.000	.703
MOR4	1.000	.746
MOR5	1.000	.548

Extraction Method: Principal Component Analysis.
Note: CON=Convenience, ATT=Attitude, SN=Subjective norm, MOR=Moral norm, PBC=Perceived behavioral control, INT=Intention, PAST=Past recycling behavior, CUR=Current recycling behavior, Bb=Behavioral belief, Nb=Normative belief, and Cb=Control belief.

Considering sample size, the second step to be addressed in a factor analysis is acquiring information about Kaiser-Meyer-Olkin's (KMO) measure of sampling adequacy (Kaiser, 1974) and Bartlett's Test of Sphericity (Bartlett, 1954). According to Dziuban and Shirley (1974), KMO value ought to range from 0 to 1. To specify, it

approaches to 1 when number of variables and level of correlation are increased, and number of factors are decreased and other variables are fixed. On the other hand, according to Dziuban and Shirley (1974), Bartlett's Test of Sphericity tests whether a correlation matrix is an identity matrix, or not. Considering null hypothesis, correlation matrix is an identity matrix. As a result of this test, significance level is taken into account. In parallel with this, rejecting the null hypothesis indicates that dataset allows researchers to conduct a factor analysis. On this basis, in order to conduct a factor analysis, Bartlett's test should have a significant value ($p < .05$) (Tabachnick & Fidell, 2013), and the KMO value should be at least .5 (Kaiser, 1974). The relevant values regarding the KMO index and Bartlett's Test of Sphericity were presented in Table 3.14.

Table 3. 14

The Results of the KMO and Bartlett's Test for the Recycling Behavior Scale for Preschool Teachers

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.817	
Bartlett's Test of Sphericity	Approx. Chi-Square	10511.847
	df	1176
	Sig.	.000

As seen in the Table 3.14, the KMO value was found .82 exceeding the lowest limit with a statistically significant Bartlett's Test of Sphericity value which shows a high correlation among the relevant variables covered in the scale (Chi-square=10511.847 and p=.000). According to Pallant (2007), KMO values between the values of 0.5 and 0.7 are mediocre, the values between 0.7 and 0.8 are good, the values between 0.8 and 0.9 are great and KMO values higher than 0.9 are excellent. In this regard, the KMO value for this dataset was great. That is to say that the obtained KMO and Bartlett's values indicated that factorability of the correlation matrix was justified, and the data set allows to be used in factor analysis. More specifically, the KMO value and

Bartlett's Test of Sphericity value for each measurement of the TPB and the additional measurements are shown in the Table 3.15.

Table 3. 15

The Results of the KMO and Bartlett's Test for Constructs in the Recycling Behavior Scale for Preschool Teachers

Measurements	KMO	Bartlett's Test of sphericity		
		Approx. Chi-Square	df	Sig.
ATT	.898	1996.436	36	.000
SN	.500	290.148	1	.000
PBC	.670	231.333	3	.000
INT	.500	316.116	1	.000
PAST	.790	433.426	10	.000
CUR	.788	459.114	10	.000
CON	.687	216.329	3	.000
MOR	.750	394.066	10	.000
Bb	.866	1269.960	15	.000
Nb	.805	758.663	6	.000
Cb	.814	564.054	10	.000

Note: CON=Convenience, ATT=Attitude, SN=Subjective norm, MOR=Moral norm, PBC=Perceived behavioral control, INT=Intention, PAST=Past recycling behavior, CUR=Current recycling behavior, Bb=Behavioral belief, Nb=Normative belief, and Cb=Control belief

As indicated in Table 3.15, the KMO value for the dimension of attitude was .898 which was a great value for conducting a factor analysis (Pallant, 2007) with a statistically significant Bartlett's Test of Sphericity value (Chi-square=1996.436 and *p*=.000). The KMO value for the dimension of subjective norm was .500 which was a mediocre value for a factor analysis (Pallant, 2007) with a statistically significant Bartlett's Test of Sphericity value (Chi-square=290.148 and *p*=.000). Moreover, the KMO value for the dimension of perceived behavioral control was .670 which was a mediocre value for a factor analysis (Pallant, 2007) with a statistically significant Bartlett's Test of Sphericity value (Chi-square=231,333 and *p*=.000). In addition to those, the dimension of behavioral intention had a KMO value of .500 which was a

mediocre value for a factor analysis (Pallant, 2007) with a statistically significant Bartlett's Test of Sphericity value (Chi-square=316,116 and *p*=.000). The dimension of past behavior, on the one hand, had a KMO value of .790 which was a good value for a factor analysis (Pallant, 2007) with a statistically significant Bartlett's Test of Sphericity value (Chi-square=433,426 and *p*=.000). The dimension of current behavior, on the other hand, had a KMO value of .788 which was a good value for a factor analysis (Pallant, 2007) with a statistically significant Bartlett's Test of Sphericity value (Chi-square=459,114 and *p*=.000). Furthermore, the dimension of convenience had a KMO value of .687 which was a mediocre value for a factor analysis (Pallant, 2007) with a statistically significant Bartlett's Test of Sphericity value (Chi-square=216,329 and p=.000). In addition, the dimension of moral norm had a KMO value of .750 which was a good value for a factor analysis (Pallant, 2007) with a statistically significant Bartlett's Test of Sphericity value (Chi-square=394,066 and *p*=.000).

Moreover, the dimension of behavioral belief had a KMO value of .866 which was a great value for a factor analysis (Pallant, 2007) with a statistically significant Bartlett's Test of Sphericity value (Chi-square=1269.960 and *p*=.000). Other measurement, the dimension of normative belief, had a KMO value of .805 which was a great value for a factor analysis (Pallant, 2007) with a statistically significant Bartlett's Test of Sphericity value (Chi-square=758.663 and *p*=.000). Furthermore, the dimension of control belief had a KMO value of .814 which was a great value for a factor analysis (Pallant, 2007) with a statistically significant Bartlett's Test of Sphericity value (Chi-square=564.054 and *p*=.000).

After justifying the first two assumptions of the factor analysis, as a third step, principal component analysis was employed to identify the number of components to be extracted. According to Tabachnick and Fidell (2013), principal component analysis allows researchers to reveal maximum common variance for each component and ascertain variables in sub-sets which are not only irrespective of all other sub-sets

but also connected to factors. To this respect, principal component analysis was preferred as an extraction method for the pilot study. Along with the principal component analysis, varimax rotation with Kaiser criterion were utilized, since the rotation of varimax is an effective option for minimalizing the correlation across factors and maximizing the correlation within the factors (Nunnally, 1978). In addition to those points, factor loading which indicates the extent to which an item is related to a latent variable (Hair et al., 2006) was considered to be at least the value of .3, as recommended by Pallant (2007) and Stevens (2009). On this basis, minimum factor loading value was determined as the value of .3. Since another point to consider was to determine how many dimensions were included in each scale, eigenvalues were checked in consideration of whether these values were higher than 1.0, or not (Pallant, 2007). Higher eigenvalues than 1.0 provided researchers with identifying the number of factors in each scale (Hair et al., 2006). Table 3.16 indicates percentage of total variance for each dimension, based on Kaiser's criteria (Kaiser, 1960).

Table 3. 16

Total Variance for the Constructs in the Recycling Behavior Scale for Preschool Teachers

Dimension	Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
		Total	% of Variance	Cumula-tive %	Total	% of Variance	Cumula-tive %
CON	1	2.028	67.594	67.594	2.028	67.594	67.594
	2	.545	18.178	85.772			
	3	.427	14.228	100.000			
ATT	1	5.908	65.647	65.647	5.908	65.647	65.647
	2	.783	8.700	74.346			
	3	.610	6.781	81.127			
	4	.453	5.034	86.161			
	5	.368	4.092	90.252			
	6	.294	3.262	93.514			
	7	.248	2.751	96.264			
	8	.199	2.216	98.480			
	9	.137	1.520	100.000			
SN	1	1.794	89.699	89.699	1.794	89.699	89.699
	2	.206	10.301	100.000			

Table 3.16 (cont'd)

Dimension	Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
MOR	1	2.619	52.380	52.380	2.619	52.380	52.380
	2	.799	15.983	68.363			
	3	.753	15.063	83.427			
	4	.513	10.268	93.695			
	5	.315	6.305	100.000			
PBC	1	2.038	67.927	67.927	2.038	67.927	67.927
	2	.580	19.327	87.254			
	3	.382	12.746	100.000			
INT	1	1.814	90.679	90.679	1.814	90.679	90.679
	2	.186	9.321	100.000			
PAST	1	2.783	55.667	55.667	2.783	55.667	55.667
	2	.750	14.998	70.665			
	3	.688	13.759	84.424			
	4	.458	9.165	93.589			
	5	.321	6.411	100.000			
CUR	1	2.850	57.004	57.004	2.850	57.004	57.004
	2	.722	14.434	71.438			
	3	.692	13.844	85.282			
	4	.385	7.706	92.988			
	5	.351	7.012	100.000			
Bb	1	4.114	68.566	68.566	4.114	68.566	68.566
	2	.647	10.786	79.352			
	3	.605	10.088	89.440			
	4	.297	4.952	94.392			
	5	.222	3.692	98.085			
	6	.115	1.915	100.000			
Nb	1	3.051	76.283	76.283	3.051	76.283	76.283
	2	.496	12.399	88.682			
	3	.285	7.127	95.809			
	4	.168	4.191	100.000			
Cb	1	2.993	59.867	59.867	2.993	59.867	59.867
	2	.771	15.412	75.279			
	3	.532	10.647	85.926			
	4	.440	8.797	94.723			
	5	.264	5.277	100.000			

Extraction Method: Principal Component Analysis.

According to Table 3.16, as a result of Principal Component Analysis, the dimension of convenience had only one eigenvalue higher than 1.0 which showed one factor for this dimension. Based on the Kaiser's criterion (Crocker & Algina 1986), 67.59% of the variance was explained by one factor in participants' ideas about convenience for recycling. Furthermore, the dimension of attitude had one eigenvalue higher than 1.0 which showed one factor for this dimension. Based on the Kaiser's criterion (Crocker & Algina 1986), 65.65% of the variance was explained by one factor in participants' attitudes towards recycling. Moreover, the dimension of subjective norm had only one eigenvalue higher than 1.0 which showed one factor for this dimension. Based on the Kaiser's criterion (Crocker & Algina 1986), 89.70% of the variance was explained by one factor in participants' subjective norms regarding recycling. In addition, the dimension of moral norm had only one eigenvalue higher than 1.0 which showed one factor for this dimension. Based on the Kaiser's criterion (Crocker & Algina 1986), 52.38% of the variance was explained by one factor in participants' moral norms regarding recycling. On the one hand, the dimension of perceived behavioral control had only one eigenvalue higher than 1.0 which showed one factor for this dimension. Based on the Kaiser's criterion (Crocker & Algina 1986), 67.93% of the variance was explained by one factor in participants' perceived behavioral control over recycling. On the other hand, the dimension of intention had only one eigenvalue higher than 1.0 which showed one factor for this dimension. Based on the Kaiser's criterion (Crocker & Algina 1986), Based on the Kaiser's criterion (Crocker & Algina 1986), 90.68% of the variance was explained by one factor in participants' recycling intention. Similarly, the dimension of past recycling behavior had only one eigenvalue higher than 1.0 which showed one factor for this dimension. Based on the Kaiser's criterion (Crocker & Algina 1986), 55.67% of the variance was explained by one factor in participants' past recycling behaviors. Additionally, the dimension of current recycling behavior had only one eigenvalue higher than 1.0 which showed one factor for this dimension. Based on the Kaiser's criterion (Crocker & Algina 1986), 57% of the variance was explained by one factor in participants' current recycling behaviors.

Furthermore, the dimension of behavioral belief had only one eigenvalue higher than 1.0 which showed one factor for this dimension. Based on the Kaiser's criterion (Crocker & Algina 1986), 68.57% of the total variance was explained by one factor in participants' behavioral beliefs regarding recycling. Furthermore, the dimension of normative belief had only one eigenvalue higher than 1.0 which showed one factor for this dimension. Based on the Kaiser's criterion (Crocker & Algina 1986), 76.28% of the variance was explained by one factor in participants' normative beliefs regarding recycling. In addition to those indirect measurements, the dimension of control belief had only one eigenvalue higher than 1.0 which showed one factor for this dimension. Based on the Kaiser's criterion (Crocker & Algina 1986), 59.87% of the variance was explained by one factor in participants' control beliefs regarding recycling.

In addition to considering eigenvalues for deciding the number of factors to retain, Pallant (2007) recommended checking scree plot for the same purpose. Scree Test, which was explained by Cattell (1966), is based on eigenvalues. Within the frame of this study, scree plot for each measurement indicated a one-factor structure. On this basis, scree plot for each variable is presented in the Appendix C.

According to Pallant (2007), another point to consider in factor analysis is checking factor loadings which points out to what extent which an item and a factor are correlated. In this regard, Table 3.17 presents factor loadings of each item in each direct measurement to one component. All items in the direct measurements, except from MOR 1, load quite strongly (higher than .6) on the relevant component. Since the factor loading of MOR 1 to the relevant factor which was .59 was quite close to the value of .6, the assumption was justified for the factor analysis.

Table 3. 17

Factor Loadings of the Items of the Direct Measurements to the Factors

Direct Variables	Factor							
	1	2	3	4	5	6	7	8
CON1	.844							
CON2	.790							
CON3	.832							
ATT1		.831						
ATT2		.857						
ATT3		.874						
ATT4		.835						
ATT5		.620						
ATT6		.813						
ATT7		.839						
ATT8		.868						
ATT9		.722						
SN1			.947					
SN2			.947					
MOR1				.587				
MOR2				.731				
MOR3				.823				
MOR4				.826				
MOR5				.617				
PBC1					.822			
PBC2					.869			
PBC3					.780			
INT1						.952		
INT2						.952		
PAST1							.655	
PAST2							.839	
PAST3							.811	
PAST4							.657	
PAST5							.748	
CUR1								.709
CUR2								.845
CUR3								.802
CUR4								.664
CUR5								.742

Extraction Method: Principal Component Analysis.
Note: EFA was separately run for each construct.

As indicated in the table above, factor loadings for the first factor ranged from .790 to .844, for the second factor ranged from .620 to .874, .947 for the third factor, for the fourth factor ranged from .587 to .826, for the fifth factor ranged from .780 to .869, .952 for the sixth factor, for the seventh factor ranged from .655 to .839, and for the eighth factor ranged from .664 to 845. Although the lowest factor loading in the fourth factor was .587, this item was retained because of its approximation to the boundary point which is .6.

In addition to the factor loadings of the items regarding direct measurements in the Recycling Behavior Scale for Preschool Teachers which were shown in the table above, Table 3.18 indicated factor loadings of each item in the indirect measurements to one component.

Table 3. 18

Factor Loadings of the Items of the Indirect Measurements to the Factors

Indirect Variables	Factor		
	1	2	3
Bb1	.755		
Bb2	.857		
Bb3	.912		
Bb4	.921		
Bb5	.841		
Bb6	.648		
Nb1		.904	
Nb2		.912	
Nb3		.892	
Nb4		.780	
Cb1			.868
Cb2			.831
Cb3			.822
Cb4			.717
Cb5			.599

Extraction Method: Principal Component Analysis.
Note: EFA was separately run for each construct.
Note: Bb=Behavioral belief, Nb=Normative belief, and Cb=Control belief

As seen in the table above, factor loadings to the first factor ranged from .648 to .921, to the second factor ranged from .780 to .912, to the third factor ranged from .599 to .868. As illustrated in Table 3.21, Cb5 which expressed a negative judgement for the respondents had a lower value than the cut-off point of .6. Since the value was equal almost equal to .6, it was retained on condition that its place would be changed in the scale and the judgement would be bolded to attract respondents' attention for the main study. In addition to that, in order not to decrease reliability value of control belief construct, Cb5 was kept in the study.

3.3.5.2. Reliability of the Scale

After necessary evidences were obtained in order to validate the scale, reliability analysis was conducted for each measurement by utilizing Cronbach's Alpha. According to Fraenkel, Wallen and Hyun (2012), reliability of an instrument highlights the degree to which scores obtained by utilizing the instrument are consistent with each other. On this basis, an acceptable Cronbach's Alpha value (α) is recommended by several researchers as the values above .70 (Nunnally, 1978; Pallant, 2007). Table 3.19 presents number of items in each measurement and the relevant α values.

Table 3. 19

Reliability of the Measurements in the Pilot Study

Measurements	Number of Item	Cronbach α
Attitude	9	.92
Behavioral Beliefs	6	.87
Subjective Norms	2	.88
Normative Beliefs	4	.90
Perceived Behavioral Control	3	.75
Control Beliefs	5	.81
Moral Norm	5	.77
Convenience	3	.74
Past Behavior	5	.79
Intention	2	.90
Current Behavior	5	.80
Total	49	.80

As indicated in Table 3.18, the Cronbach's Alpha value was α=.92 for the attitude measurement including nine items, α=.87 for the behavioral belief measurement including six items, α=.88 for the subjective norm measurement including two items, α=.90 for the normative belief measurement including four items, α=.75 for the perceived behavioral control measurement including three items, α=.81 for the control belief measurement including five items, α=.77 for the moral norm measurement including five items, α=.74 for the convenience measurement including three items, α=.79 for the past behavior measurement including five items, α=.90 for the intention measurement including two items, and α=.80 for the current behavior measurement. The reliability analyses indicated an acceptable internal consistency reliability for each measurement.

3.3.5.3. Confirmatory Factor Analysis

According to Bangert (2006), confirmatory factor analysis is useful for testing the estimated latent structure emerged from the exploratory factor analysis. In other words, exploratory factory analysis is conducted to obtain a model by using a dataset, and then this model is confirmed to provide an accurate result through confirmatory factor analysis (Schumacker & Lomax, 1996). On account of testing the construct validity for the current study, the latent model obtained from the exploratory factor analysis was tested by using confirmatory factor analysis upon the aforementioned 11 factors by means of the dataset of the main study. In order to test the construct validity, Confirmatory Factor Analysis (CFA) was conducted to 49 items included in the Recycling Behavior Scale for Preschool Teachers in order to explore how well these items were fit to 11 latent factors, namely attitude toward recycling, subjective norms regarding recycling, perceived behavioral control over recycling, recycling intention, behavioral beliefs regarding recycling, normative beliefs regarding recycling, control beliefs regarding recycling, current recycling behavior, moral norms regarding recycling, convenience for recycling, and past recycling behavior.

In this regard, Linear Structural Relations Statistics Package Program (LISREL 8.8), which was developed by Jöreskog and Sörbom (2006), was utilized for applying CFA. On this basis, the model tested by utilizing LISREL was called as measurement model. According to Anderson and Gerbing (1988), the first procedure which should be followed to assess a proposed model is to assess the reliability and validity of the measurement model by the way of investigating the relationships between latent variables and the relevant indicators of these variables. Figure 3.1 illustrated that most of the 64 manifest variables had a higher value than .7, except several items (i.e. Bb6, Cb4, Cb5, ATT1, ATT5, PBC3, CUR1, CUR4, CUR5, MOR1, MOR2, MOR4, MOR5, PAST1, PAST4, PAST5). Furthermore, Henseler et al. (2009) recommended that it is appropriate for removing items below the critical value of .7 when composite reliability increases because of the removal of these items. When the composite reliability (CR) was calculated for whether or not Bb6 should be removed from the study, the CR value of the corresponding construct showed an increase in .019. Moreover, in order to determine whether Cb4 and Cb5 should be eliminated from the study, the CR value was calculated for the construct, and results indicated that CR value of the construct showed an increase in .09. For the ATT constructs, on the other hand, the CR value showed a decrease in .002. Similarly, when PBC3 was eliminated from the study, the CR value for the corresponding construct showed a decrease in .022. Moreover, the CR value of the construct of CUR showed a decrease in .046 when CUR1, CUR4, and CUR5 were eliminated from the study. Concordantly, when MOR1, MOR2, MOR4, and MOR5 were eliminated for the study, the CR value of the corresponding construct indicated a decrease in .192. Furthermore, when PAST1, PAST4, and PAST5 items were removed from the corresponding construct, its CR value decreased in .045. In other words, only Bb and Cb variables demonstrated an increase in its CR variable when the corresponding item was eliminated, and the removal of other items which had a lower value than .70 as a factor loading indicated a decrease in the CR values of these variables. In spite of the amount of the increase in the CR value of the Cb construct, these two items were retained in the study, because of the amount of increase, and its conceptual importance for this construct. In this

respect, the confirmatory factor analysis of the hypothesized model was presented in Figure 3.2. In the figure, whereas observed variables were represented in the figure with rectangles, latent variables were represented by means of ellipses.

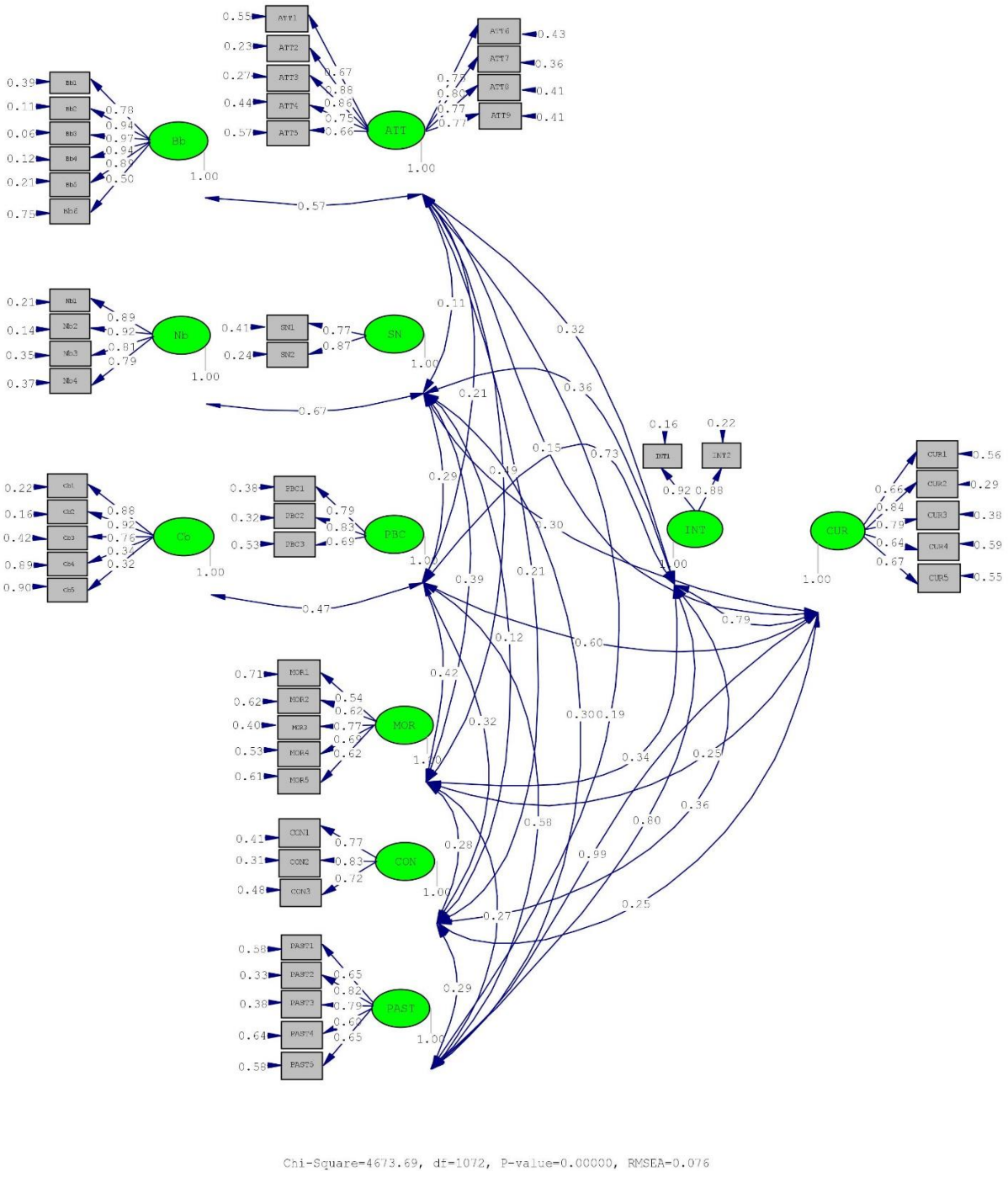


Figure 3. 2 Confirmatory Factor Analysis of the Hypothesized Model

3.3.5.3.1 Measurement Model Assessment

According to Anderson and Gerbing (1988), the first procedure which should be followed to assess a proposed model is to assess the reliability and validity of the measurement model by the way of investigating the relationships between latent variables and the relevant indicators of these variables. For this reason, in term of measurement model assessment, not only validity but also reliability of the constructs will be explained in the following section.

3.3.5.3.1.1 Internal Consistency Reliability

In order to satisfy internal consistency reliability, composite reliability (CR) which is a sign of internal consistency is recommended to be utilized instead of Cronbach's Alpha value (Werts, Linn & Jöreskog, 1974). According to Hair et al. (1998), CR which deals with loadings during the calculation of indicators ought to be at least the value of .7. In addition to that, Nunnally and Bernstein (1994) suggested that a higher CR value than .8 tends to show better results in the validation of a model. The constructs and their CR values are presented in Table 3.23. Results showed that CR values range from .785 to .939. In other words, CR value of each construct was higher than the critical value of CR suggested by Hair et al. (1998).

3.3.5.3.1.2 Convergent Validity

According to Bagozzi and Yi (1988), average variance extracted (AVE) should be taken into account by combining the corresponding items for each construct while considering convergent validity. Whereas AVE value was recommended by Bagozzi and Yi (1988) as higher than .5, Fornell and Larcker (1981) suggested that an AVE value less than .5 was accepted as an adequate value in order to satisfy convergent validity of a construct, only if CR value of the construct was higher than .6. As it is indicated in Table 3.19, there were two constructs which had lower value than the cut-off point, moral norm and control belief. Since the CR values of these constructs were

above .6, convergent validity was satisfied for these constructs, as well. To put it in a different way, each construct had an adequate convergent validity (see Table 3.20).

Table 3. 20

Composite Reliability (CR) and Average Variance Extracted (AVE) values of Constructs

Constructs	CR value	AVE value
Convenience	.818	.600
Attitude	.929	.594
Behavioral Belief	.939	.726
Subjective Norm	.805	.675
Moral Norm	.785	.426
Normative Belief	.915	.730
Perceived Behavioral Control	.815	.596
Control Belief	.801	.476
Intention	.895	.810
Past Behavior	.831	.500
Current Behavior	.812	.525

3.3.5.3.1.3 Discriminant Validity

Discriminant validity assures the statistical uniqueness of a construct and indicates an interested characteristic which is not conquered by another construct (Hair et al., 2010). In that respect, discriminant validity offers evidences showing that an instrument is not correlated too strongly with its theoretically-indicated ingredient constructs on which are expected to be distinct (Campbell, 1960). If discriminant validity is not satisfied, it threatens the inference about whether the obtained path of a structural model is accurate, or it is resulted in statistical disparities (Farrell, 2010). According to several researchers, the correlation coefficient between two constructs can be an indicator of discriminant validity and ought to be less than 1 (Gaski & Nevin, 1985), or less than .85 (Kline, 2011). Table 3.20 illustrated that all variables satisfied the criteria, since the correlation between the corresponding variables were less than

1. On the other hand, the correlation between past behavior (PAST) and current behavior (CUR) were .99, which was approximately equals to 1. For this reason, this correlation posed a threat for the discriminant validity. Moreover, Hair et al. (2014) recommended to compare the square-root value of AVE and the correlations between variables, in that the former should be above the values of the latter. On this basis, Table 3.21 indicated that all constructs, except from past behavior, had the highest loading value on its own construct.

Table 3. 21

Discriminant Validity

	Correlations between latent variables										
	Bb	Nb	Cb	ATT	SN	PBC	MOR	CON	PAST	INT	CUR
Bb	-										
Nb	.18	-									
Cb	.37	.24	-								
ATT	.57	.16	.30	-							
SN	.14	.67	.25	.11	-						
PBC	.18	.40	.47	.21	.29	-					
MOR	.45	.39	.40	.49	.39	.42	-				
CON	.22	.07	.28	.21	.12	.32	.28	-			
PAST	.20	.31	.43	.19	.30	.58	.27	.29	-		
INT	.29	.40	.48	.32	.36	.73	.34	.36	**.80**	-	
CUR	.18	.34	.38	.15	.30	.60	.25	.25	**.99**	.79	-
CR	.939	.915	.801	.929	.805	.815	.785	.818	.831	.895	.812
√AVE	.85	.85	.69	.77	.82	.77	.65	.78	.71	.90	.72

As presented in Table 3.20, the square-root value of AVE was lower than the corresponding correlations between past behavior (PAST) and intention (INT), and past behavior (PAST) and current behavior (CUR). Based on the result, the paths between past behavior and intention, and past behavior and current behavior were removed for the subsequent path analyses within the scope of structural equation modeling analyses.

3.3.5.3.2 Structural Model Assessment

In order to check structural model assessment, model fit indices of the proposed model undergone CFA were examined. In this respect, Chi-square; ratio of Chi-square to degrees of freedom; root mean squared error of approximation; standardized root mean residual, normed fit index, non-normed fit index; comparative fit index, goodness-of-fit index, adjusted goodness-of-fit index were investigated in consideration of the model fit statistics. Each of these values was presented in the Table 3.22.

Table 3. 22

Model Fit

Fit Index	Model Values	Suggested Level	Reference
$\chi 2$/df	4.36	< 5: good fit	Kelloway (1998)
RMSEA	.076	<.05: perfect fit, <.08: reasonable fit.	Schumacker and Lomax (1996)
		<.05: good fit <.08: adequate fit <.10: mediocre fit	Browne and Cudeck (1993)
SRMR	.067	<.08: good fit	Hu and Bentler (1998) Brown (2006)
CFI	.92	.95 < CFI < 1.00: perfect fit .90 < CFI <.95: reasonable fit	Schermelleh-Engel, Moosbrugger and Müller (2003)
NFI	.91	.95 < NFI < 1.00: perfect fit .90 < NFI <.95: reasonable fit	Schermelleh-Engel, Moosbrugger and Müller (2003)
		NFI >.95: good fit NFI >.90: acceptable fit	(Marsh & Grayson, 1995).
NNFI	.92	.95 < NNFI < 1.00: perfect fit .90 < NNFI <.95: reasonable fit	Schumacker and Lomax (1996
GFI	.75	GFI > .90: acceptable fit	Marsh & Hau (1996)
AGFI	.72	AGFI > .90: acceptable fit	Hooper, Coughlan & Mullen (2008)

Note: *p < .05; $\chi 2$=Chi-square; $\chi 2$/df=Ratio of Chi-square to Degrees of Freedom; RMSEA=Root Mean Squared Error of Approximation; SRMR=Standardized Root Mean Residual; NFI= Normed Fit Index; NNFI=Non-Normed Fit Index; CFI=Comparative Fit Index; GFI=Goodness-of-Fit Index; AGFI=Adjusted Goodness-of-Fit Index.

Since chi-square statistics were quite sensitive to sample size (Tabachnick & Fidell, 2007), Kelloway (1998) highlighted that the ratio of chi-square to degrees of freedom should be utilized rather than the value of chi-square. According to Bollen (1989), the ratio of chi-square to degrees of freedom ought to be as small as possible. In this regard, Kelloway (1998) specified this ratio by suggesting that it should be less than 5 for a good fit to dataset. Since the ratio of chi-square to degrees of freedom was 4.36 (4673.69/1072 = 3.60, $p<.05$) in this study, it indicated a good fit to the data. In addition to the ratio of chi-square to degrees of freedom, RMSEA value which concerns with the disparity resulted from measurements of the approximate fit within a population should be considered to decide fitness of the overall model (Steiger, 1990). Schumacker and Lomax (1996) stated that an approximate RMSEA value to .05 is an indicative value for a perfect fit, whereas a value ranging from .05 to .08 is accepted as a reasonable fit. According to Browne and Cudeck (1993), however, RMSEA value lower than .05 can be regarded as a good fit, while a value between .05 and .08 is the indicator of an adequate fit, and a value between .08 and .10 is regarded as a mediocre fit. Since RMSEA value for the study was .076, it could be inferred that it indicated a reasonable fit based on the criteria of Schumacker and Lomax (1996) and adequate fit based on the criteria of Browne and Cudeck (1993). However, Schermelleh-Engel, Moosbrugger and Müller (2003) argued that SRMR value should also be taken into consideration as descriptive measures to decide a model's fitness, particularly for descriptive measurement of badness of an overall model. Brown (2006) and Hu and Bentler (1998) recommended that SRMR values lower than .08 is an indicator of a good fit. Furthermore, SRMR value of the CFA model was found as .067, indicating a good fit. Furthermore, Bentler (1990) suggested that CFI values are important indicators for researchers to take account of fit relative to small sample sizes. On this basis, Schermelleh-Engel, Moosbrugger and Müller (2003) stated that this value should range from .95 to 1.00 for a perfect fit and range from .90 to .95 for a reasonable fit. Since the CFI value for the study was .92, it indicated a reasonable fit.

Besides those model fit indices, Kline (2005) suggested reporting NFI value of the overall model fit. Schermelleh-Engel, Moosbrugger and Müller (2003) argued that NFI value should range from .95 to 1.00 for a perfect fit, whereas it should range from .90 to .95 for a reasonable fit. Likewise, while a NFI value above .95 indicates a good fit, a NFI value greater than .90 is an indicator of an acceptable fit (Marsh & Grayson, 1995). Since the NFI value for the study was .91, it indicated a reasonable and an acceptable fit. According to Tucker and Lewis (1973), NFI value is sensitive to sample size, thus a NNFI value should be considered by researchers so as to obtain a measurement of a relative fit. According to Schumacker and Lomax (1996), NNFI value should range from .95 to 1.00 for a perfect fit, while it should range from .90 to .95 for a reasonable fit. Since the NNFI value for the study was .92, it indicated a reasonable fit. GFI which refers to the degree of a model fit (Jöreskog & Sörbom, 1993) was reported in the current study, on the other hand, as .75, demonstrating an almost acceptable fit (Marsh & Hau, 1996). Similarly, AGFI which provides researchers with eliminating bias resulted in the complexity of a (Jöreskog & Sörbom, 1989) was reported as .72 for the CFA model, indicating an almost acceptable fit based on the cut-off value determined by Hooper, Coughlan and Mullen (2008).

In light of these findings, the dataset indicated an acceptable fit relative to the proposed model ($\chi 2/df = 4.36$, RMSEA = .076, SRMR = .067, CFI = .92; NFI = .91, NNFI = .92, GFI= .75; AGFI= .72).

3.4. Data Collection Procedure

After the research instruments were revised based on the aforementioned analyses, necessary permissions were obtained from the Applied Ethics Research Center at METU (see Appendix D) and the Provincial Directorate for National Educational Education in Ankara dependent of the Ministry of National Education (see Appendix E) throughout the spring semester of 2016-2017 and fall semester of 2017-2018 academic years. For the nine-month period over the semesters, 294 data for pilot study and 584 data for main study were collected. Completing the instruments took about 15-20 minutes. Prior to providing the instruments for the participant teachers, the

researcher informed the participants about the aim of the study, how to complete the instruments, and their rights to discontinue or not to take part in the study. In addition to that, confidentiality issues were explained to the participants in order for them to feel themselves comfortable about the information they supplied would not be shared anyone else during and after the administration. For this reason, the participant teachers were asked not to write any specific name on the forms. Moreover, the researcher was ready in a somewhere closer to those teachers to clarify the points they had hard times to understand while completing the instruments. Whereas a considerable number of the participants preferred to complete the instruments in silent places such as their schools' kitchen, cafeteria or hall, other teachers who had an assistant employee or a trainee in their classrooms tended to complete these instruments in their classrooms. Immediately after the completion of the instruments, each of them was collected by the researcher in along with data confidentiality.

3.4.1. Internal Validity

Internal validity has been defined by Fraenkel, Wallen and Hyun (2012) as the fact that differences observed upon dependent variables ought to be directly in relation with independent variables lest these differences are resulted due to other unexpected variables. This clearly indicates that there may be some conditions which are likely to have a negative impact on internal validity of a study. Thus, identification of possible threats to internal validity of a study and reduction of these threats to the smallest possible level are of importance to make the study internally valid. Fraenkel, Wallen and Hyun (2012) put an emphasis on that internal validity threats to be considered in survey research are subject characteristics, mortality or loss of subjects, location, and instrumentation among several other treats. In this sense, these threats and possible precautions in order to deal with them were carefully addressed in the current research.

Fraenkel, Wallen and Hyun (2012) argued that even though participants of a study are selected in consideration of certain characteristics, results of a study may vary

according to other critical characteristics of these participants. Considering the subject characteristics threat, preschool teachers working in public schools in Ankara were chosen as the participants of the study along with the assumption that they would resemble in terms of particular characteristics based on possibility of their opportunities to recycle materials at their schools, and living within the borders of the same city. Actually, the reason behind selecting preschool teachers working at public schools rather than the ones working at private schools as the sample group of the study was not to trigger internal validity of the study. Additionally, a considerable majority of the sample group of the study was constituted by female preschool teachers whose gender-related characteristics were assumed to be similar with each other. Hence, internal validity of the study was not assumed to be triggered by characteristics of the participant preschool teachers.

Another internal validity threat to a study highlighted by Fraenkel, Wallen and Hyun (2012) was mortality or loss of subjects which occurs is in question when participants of a study are withdrawn from the study or researchers are not enable to collect all of the distributed scales from the participants. For instance, distributing the questionnaires for pilot study to the participants and collecting them back were performed by the researcher especially throughout the 2-week-long in-service training provided for all teachers working at public schools across the country immediately after the spring semester was ended in 2016-2017 academic year. Moreover, proper times for administering questionnaires when the participant teachers suggested were considered by the researcher in order to collect as more data as possible. Furthermore, the participants were carefully informed about the aim of the study, and the researcher was ready for answering any questions directed by the participant teachers so as to increase the completion of the questionnaires completed by them. Since almost all of the questionnaires was taken back immediately after having been completed by the participants, there were no missing questionnaire not returning to the researcher. In this way, mortality threat to internal validity was aimed to be controlled for this study.

In addition to subject characteristics and mortality, location threat to internal validity was considered for the current study. According to Fraenkel, Wallen and Hyun (2012), places where questionnaires are administered may have an influence on a study. Although it is difficult to administer all questionnaires in similar areas in terms of noise, size, lighting opportunities included in them, appropriate places suggested by the participant teachers to complete the questionnaires in an effective way were determined in data collection process. As a result, location as an internal validity threat was minimized for this study.

The other threat to internal validity of a study is instrumentation. Fraenkel and Wallen (2006) explicated that instrumentation can be an internal validity threat by means of instrument decay, characteristics of data collector and bias of data collector. With regard to instrument decay, printing all questionnaires in the same format was considered by the researcher to optimize scoring the instrument and coding the variables. Furthermore, in terms of characteristics of data collector, all of the questionnaires were collected by the same researcher in order to deal with possible consequences resulted from different data collectors. In order to cope with data collector bias with regard to instrumentation threat, on the other hand, the researcher did not intervene the participants during the completion of the questionnaires in order not to change their possible responses for the questions included in the questionnaires. In other words, except from informing participants about the purpose of the study and providing responses for them to have a clear understanding of the questions in the questionnaires, the researcher did not interact with them. Hence, threat to internal validity of the study was minimized and eliminated by the researcher.

3.5. Data Analysis Procedure

Before model assessment was dealt with, dataset was checked for data screening. Thus, IBM SPSS 22.0 statistical software was utilized for analyzing the data. In this regard,

descriptive statistics were employed to take into consideration the necessary mean, standard deviation, frequency, percentage, and minimum and maximum values included in the dataset. After that, path analysis which is a statistical method to investigate causal relationships between two or more variables (Lleras, 2005) was utilized in the main study as a simplified structural equation modelling (SEM) (Huang & Hsueh, 2007) in order to test the hypotheses based upon the relationships among the relevant variables. MacLean and Gray (1998) regarded SEM as a technique which is used to estimate uncertain parameters in a linear structure equation set. In addition, Wuensch (2012) regarded path analysis as an analytical method for offering estimates and extents of hypothesized relationships between a set of constructs through path diagram, and Hoyle (1995) asserted that SEM provides a comprehensive approach to test models including both causal and correlational relationships among manifest/indicator/observed variables and latent/unobserved variables or factors. In that respect, while each item to be included in EFA and CFA functioned as an observed variable in the study, 11 constructs were the latent variables of the study which cannot be directly measured.

According to Huang and Hsueh (2007), path analysis includes a series of simultaneously-conducted regression analysis in order to confirm a theoretically proposed model. In this respect, path analysis is regarded as a statistical technique which is composed of a number of regression equations. It is a useful SEM analysis for investigating direct and indirect relationships among constructs in a proposed model (Lleras, 2005). From a broader perspective, Byrne (2001) stated that SEM has several advantages compared with other multivariate methods. One of the uniqueness of SEM is that it is used to analyze a dataset by designating relationships among variables under study due to its confirmatory structure. Since other multivariate methods are descriptive in nature, it aggravates to conduct hypothesis testing. The second unique feature of SEM is that estimates of error variance parameters are clearly presented by means of making an assessment or adjustment for these errors. Another

unique feature of SEM is that it includes not only unobserved but also observed variables within the analyses, whereas other methods incorporated observed variables within the analyses. The last unique characteristic of SEM is that it provides researchers with both modeling multivariate relationships and estimating firsthand and secondhand impacts of variables. For Hoe (2008), SEM provides researchers with a test in which confirmatory factor analysis as well as structural mode were harmonized. Raykov and Marcoulides (2006) drew a more comprehensive frame and highlighted that SEM allows researchers to take advantage of path analyses, confirmatory factor analysis, structural regression analyses and latent change model.

More specifically, SEM provides two statistical techniques for researchers, Partial Least Square-based SEM (PLS-SEM), and Covariance-based SEM (CB-SEM) (Astrachan, Patel & Wanzenried, 2014). While PLS-SEM allows researchers to support the explained variance and t-values, whereas CB-SEM provides researchers with increasing the compatibility of the proposed covariance matrix and the sample covariance matrix so as to verify the proposed model (Gefen, Straub & Boudreau, 2000) and testing the fitness of a model to a corresponding data set (Astachan, Patel & Wanzenried, 2014). According to several researchers, PLS-SEM has important drawbacks in that measurement errors have more chance correlations within themselves in PLS models, resulting in biased and inefficient estimates (e.g. Goodhue et al., 2013; Rönkkö, 2014). Indeed, it has been highlighted that factor loadings are quite biased in PLS analyses (Evermann & Tate, 2013). In addition, the lack of PLS in not providing either tests or indices to indicate to the strength of a model in terms of reflecting a set of observed data (Rönkkö, McIntosh & Antonakis, 2015). Furhermore, although several advantages of PLS analysis over CB-SEM such as lower numbers for sample size, less restriction of assumptions about distribution, and more effective way of formal measurement have been asserted in the extant literature (e.g. Willaby et al.,2015), each assumption was discussed by Rönkkö, McIntosh and Antonakis (2015). For instance, Rönkkö, McIntosh and Antonakis (2015) criticized

PLS models in that although it was assumed that PLS includes biases and inconsistency in terms of running with less sample size and non-normal data, as well. In fact, CB-SEM softwares have been developed recently in order to cope with small sample size and non-normal distributions (Rönkkö, McIntosh & Antonakis, 2015). In this regard, it was emphasized by the researchers that chi-square statistic can be utilized to deal with lower sample size, and non-normally distributed data can be overcome through several techniques such as modified test statistics, and robust estimations. Besides those points, CB-SEM provides researchers with important advantages such as modifications for a proposed model to fit the corresponding data set (Hancock, 1999). Moreover, PLS-SEM has been criticized, because it is lack of formal testing and assessment procedure (Dijkstra, 1983; Rönkkö & Evermann, 2013). Concordantly, PLS was recommended not to be utilized in psychological research (Rönkkö, McIntosh, & Antonakis, 2015). Because of the aforementioned limitations of PLS-SEM analysis, CB-SEM analysis was preferred to be used in the current study.

While performing statistics based on SEM, there are several statistical programs to be utilized such as LISREL (Jöreskog & Sörbom, 1989), CALIS (Hartmann, 1992), EQS (Bentler, 1995), Mplus (Muthen & Muthen, 1998), LISCOMP (Muthen, 1988), AMOS (Arbuckle & Wothke, 1999), SEPATH (Steiger, 1995), Mx (Neale, 1997), RAMONA (Browne & Mels, 1992), and TETRAD (Scheines et al., 1994). As previously stated, there are various software programs to conduct structural equation modeling. Among them, however, LISREL which provides a general framework for previously-mentioned software programs and results in naming SEM models as LISREL models has been the most popular software to be utilized in structural equation modeling by researchers (Bryne, 1998). For this reason, LISREL 8.8 software package program was preferred for performing CFA and path analysis as a SEM analysis within the current study.

3.6. Ethical Issues

Throughout the current study, ethical issues were taken into consideration in order to guarantee the protection of participants from possible harms in obedience with confidentiality policy for obtained data and to avoid a possible deception of the participants, as recommended by Fraenkel and Wallen (2006). In this regard, voluntary participation was accepted for the study in which there was not any factor triggering either physical or psychological damage for the participants. In addition, they were warned in that they could be withdrawn from the study at any time interval they tended to feel themselves uncomfortable about the implementation. On the contrary, any personal information which might endanger their privacy and confidentiality of their responses during the study was not demanded by the researcher. Furthermore, necessary permissions to conduct the present study which were obtained from the Middle East Technical University and the Provincial Directorate for National Educational Education in Ankara were showed to them prior to starting to administer the instruments. Along with these documents, a detailed explanation was provided for them in order for them to have a clear understanding of the purpose of the study. In this way, participants of the present study were kept away from a possible way of deception.

3.7. Assumptions and Limitations of the Study

There were several assumptions and limitations upon the study. A detailed explanation about both assumptions adopted and limitations experienced in the study was provided in the following subsections.

3.7.1. Assumptions of the Study

In the heart of the Theory of Planned Behavior, the assumption has been lied that its psychological constructs, namely attitude toward behavior, subjective norms, and

perceived behavioral control root in their corresponding cognitive construct, namely behavioral belief, normative belief, and control belief, respectively. Along with the TPB, it was assumed in the study that each of the aforementioned beliefs forms a basis for its corresponding construct. In parallel with this assumption, the participant preschool teachers were assumed to be honest and provide accurate responses while responding the items related to their recycling beliefs, attitudes towards recycling, subjective norms about recycling, perceived behavioral control over recycling, recycling intention, current recycling behavior, moral norms about recycling, convenience for recycling, and past recycling behavior included in the instruments. Another assumption adopted in the study was that the instruments were employed by the researcher to the participants under similar conditions. The last assumption was that the participants did not interact with each other throughout the implementation.

3.7.2. Limitations of the Study

As each and every research study has several limitations, the present study has several limitations, as well. Firstly, the number of items could be considered as a limitation for the study. More specifically, there were 17 items in the Demographic Information Questionnaire, and there were 64 items in the Recycling Behavior Scale for Preschool Teachers in total. Therefore, attention paid by the respondents to the instruments could be difficult in some levels. Secondly, convenient sampling technique was utilized in the current study to obtain data from the preschool teachers working at public schools in Ankara. This nonrandom sampling technique could negatively influence generalizability of the research findings. Thirdly, in consideration of gender of the participants, number of female teachers participated in the study was quite more than the number of their counterparts, resulting in making inferences for male teachers. In addition to that, the current study was conducted with preschool teachers working at public schools in Ankara, but not working at private schools. Fourthly, self-reported scales were utilized in the current study in which the respondents were expected to be honest while responding the items included in the instruments. Moreover, the

assertions of the respondents regarding their actual recycling behavior were considered within the scope of this study. Lastly, current and past recycling behavior of the respondents were evaluated in consideration of paper, glass, plastic, cell battery, and aluminum materials. Depending on the conversations with the participant teachers in data collection process, absence of other recyclable materials such as waste oil could be cited as another limitation for this study.

CHAPTER 4

RESULTS

This chapter presents the results of data analyses utilized in the current study so as to examine the determinants of recycling behavior of preschool teachers. In a broad sense, preliminary data analyses, descriptive statistics, and path analysis were conducted in the present study, respectively. Firstly, within the scope of preliminary data analysis, data screening procedure was clarified by checking data accuracy, missing data, and outliers. Secondly, the descriptive statistics were undertaken to investigate the variables taking into account their mean values, standard deviation, minimum and maximum values, and frequency distribution. Finally, the required assumptions of the path analysis within structural equation modeling were checked followed by the explanation of the structural model.

4.1. Preliminary Data Analyses

Preliminary data analyses were undertaken by utilizing IBM SPSS 22.0 statistical software in order to determine the appropriateness of the obtained data for the current study.

4.1.1. Data Screening

In this process, the data set was checked in terms of data accuracy, missing data, and outliers.

4.1.1.1. Data Accuracy

As earlier mentioned in the research methodology chapter, 584 preschool teachers participated in this study. Based on the data set obtained from those participant teachers, frequency analysis was conducted to categorical variables, as illustrated in Tables 3.3, 3.4, 3.5, and 3.6 in the previous chapter, research methodology chapter. Subsequently, each continuous variable was scrutinized in terms of minimum and maximum values attributed to each of continuous variables (see Table 4.1). These values indicated an appropriate range from 1 to 7. To put it in a different way, not only categorical variables but also continuous variables had a considerable value within the expected range.

4.1.1.2. Missing Data

According to Pallant (2011), it is essential for inspecting the percentages of missing values for each variable in a data set. If a variable has less than five percent of missing values, it was suggested that those variables be disregarded (Tabachnick & Fidell, 2013). Therefore, missing values for each variable were checked by using descriptive statistics. The results indicated that each variable had less than five percent of missing values in that missing values ranged from 0.2% to 4.1%, resulting in a reasonable amount of missing data for the data set.

Before starting to data analyses, a data set should be checked by the researchers (Vieira, 2011). In this respect, a variety of techniques were reported to inspect the missing data such as pairwise deletion, list wise deletion, mean substitution (Pallant, 2011), and median substitution (Hair et al., 1998). Herein, Schumacker and Lomax (2004) did not suggest utilizing pairwise or list wise deletion in order not to lose data.

Furthermore, these techniques lead to a decrease in the reliability of the results of a research, and an increase in the bias within a research (Cumming, 2013). According to UCLA Statistical Consulting Service (2011), mean or median substitution is widely used by researchers so as to cope with missing values. Since median substitution is regarded one of the most proper

strategies used to replace with missing values in a data set (Harrell, 2001), median substitution which refers to the replacement of missing values by median of the relevant construct (Oba et al., 2003) was preferred for the current study as a treatment for missing data.

4.1.1.3. Outliers

Outliers are detected by using several strategies such as histograms, Tabachnick and Fidell (2001) recommended that standardized residuals or z-scores higher than +/-3.3 can be considered as a cut-off criteria for inspecting outliers. Considering this criteria, data obtained from 35 participants indicated outliers ranging from -8.81 to -3.35. In fact, among 584 participants, attitude (ATT) scores of the fourteen participants, subjective norm (SN) scores of the nine, moral norm (MOR) scores of two participants, convenience (CON) scores of five participants, and behavioral belief (Bb) scores of five participants were regarded as outliers.

In order to determine whether these outliers have an apparent impact on the analyses, values of the Cook's distances were checked, as proposed by Pallant (2005) and Stevens (2002). In fact, it was stated that the outliers do not have an important influence on the following analyses, provided that the corresponding Cook's distance value for each case is lower than 1 (Pallant, 2005). On this basis, table of residuals statistics and the relevant column indicating the Cook's distance value in the data view window in IBM SPSS 22.0 statistical software were investigated. These results showed a range from 0.00 to 0.046. In other words, the Cook's distances did not exceed the cut-off value of 1, illustrating that the detected outliers from the sample can be retained in the present study.

4.2. Descriptive Statistics

In order to answer the first research question (R. Q.) adopted in this study, descriptive statistics were utilized, namely minimum and maximum values, mean scores, standard

deviation, range, skewness and kurtosis values which are obtained from each construct by the demographic information form and the Recycling Behavior Scale for Preschool Teachers.

R.Q. 1: What are preschool teachers' levels of attitudes towards recycling, subjective recycling norms, perceived behavioral control over recycling, past recycling behavior, convenience for recycling, moral norms regarding recycling, recycling intentions and current recycling behaviors?

Table 4.1 presents the descriptive analysis of each subscale covered in the Recycling Behavior Scale for Preschool Teachers, namely attitude toward recycling, behavioral beliefs, outcome evaluation, subjective norms, normative beliefs, motivation to comply, perceived behavioral control over recycling, control beliefs, power of control, behavioral intention, past behavior, current behavior, convenience, and moral norm. As indicated in the descriptive statistics in Table 4.1, the participant preschool teachers had a highest level of behavioral belief regarding recycling (M=6.90, SD= .29) while they scored lowest on normative belief regarding recycling (M=4.75, SD= 1.81) in 7-point Likert scales. Based on these results, it can be inferred that behavioral belief is given the top priority by the participant preschool teachers, illustrating that beliefs about the consequences of recycling are quite important for the preschool teachers. On the other hand, their beliefs about whether significant others for them approve or disapprove their recycling behavior are least important for the participants.

Table 4. 1.

Mean, Standard Deviation, Minimum and Maximum Values, Actual Range for Each Construct

Construct	M	SD	Minimum	Maximum	Actual Range	N
Attitude	6.83	.41	3.67	7.00	1-7	584
Behavioral belief	6.90	.29	4.83	7.00	1-7	584
Outcome evaluation	6.88	.39	3.00	7.00	1-7	584
Subjective norms	5.59	1.33	1.00	7.00	1-7	584
Normative belief	4.75	1.81	1.00	7.00	1-7	584
Motivation to comply	6.02	1.40	1.00	7.00	1-7	584
Perceived behavioral control	5.84	.82	4.00	7.00	1-7	584
Control belief	5.79	.88	3.60	7.00	1-7	584
Power of control	6.76	.57	3.00	7.00	1-7	584
Behavioral intention	5.52	1.15	2.00	7.00	1-7	584
Past behavior	5.12	1.45	1.00	7.00	1-7	584
Current behavior	4.96	1.55	1.00	7.00	1-7	584
Convenience	6.50	.73	4.00	7.00	1-7	584
Moral norms	6.40	.67	4.00	7.00	1-7	584

Note: f=Frequency, M=Mean, SD=Standard deviation

4.2.1. Attitude toward Recycling

Attitude refers to an individual evaluation of psychological concepts (Fishbein & Ajzen, 1975). Based on this definition, in this research attitude toward recycling has been defined as the preschool teachers' positive or negative evaluations of recycling. In the current study, there were nine items to measure attitudes of preschool teachers toward recycling on a 7-point Likert scale. Table 4.2 indicates the frequency and percentages of recycling attitude items with mean and standard deviation values for each item.

As illustrated in Table 4.2, the total mean score of attitude toward recycling scale has a quite higher value than the mid-point of 3.5, showing that participant preschool teachers

hold positive attitudes toward recycling with a standard deviation of .41 (*M*= 6.83, *SD*=.41). In other words, the participants reported that recycling was good (99%), necessary (99.2%), beneficial (99.2), sensitive (97.7%), sanitary (96.6%), valuable (98.8%), right (99.3%), reasonable (99.3%), and worth to pay effort (99.4%). On the other hand, there were quite less participants who reported that recycling was bad (.4%), insensitive (.5%), insanitary (1.2%), invaluable (.3%), wrong (.2%), and unreasonable (.2%). Moreover, there was not any participant who reported that recycling was unnecessary, unbeneficial, and not worth to pay effort.

Table 4. 2

Frequency Distribution, Mean, and Standard Deviation of Attitudes toward Recycling Items

Items	For me recycling is															
	7		6		5		4		3		2		1			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
Good	504	86.3	53	9.1	21	3.6	4	.7	0	0	1	.2	1	.2	6.80	.60
Necessary	527	90.2	40	6.8	13	2.2	4	.7	0	0	0	0	0	0	6.87	.45
Beneficial	535	91.6	32	5.5	12	2.1	5	.9	0	0	0	0	0	0	6.88	.45
Sensitive	507	86.8	47	8	17	2.9	10	1.7	3	.5	0	0	0	0	6.79	.62
Sanitary	483	82.7	49	8.4	32	5.5	13	2.2	4	.7	3	.5	0	0	6.69	.80
Valuable	512	87.7	49	8.4	16	2.7	5	.9	2	.3	0	0	0	0	6.82	.54
Right	534	91.4	38	6.5	8	1.4	3	.5	1	.2	0	0	0	0	6.89	.43
Reasonable	528	90.4	42	7.2	10	1.7	3	.5	1	.2	0	0	0	0	6.87	.44
Worth to pay effort	547	93.7	25	4.3	8	1.4	4	.7	0	0	0	0	0	0	6.91	.39
Total															6.83	.41

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Strongly Agree, 6= Agree, 5=Somewhat agree, 4=Undecided, 3=Somewhat disagree, 2=Disagree, 1= Strongly disagre

4.2.2. Subjective Norms regarding Recycling

Subjective norm has been defined as a social constraint perceived by an individual to perform or not to perform a behavior (Ajzen, 1991). In this respect, in this study subjective recycling norm refers to the social pressure perceived by preschool teachers with respect to recycling. In the present study, there were two items to measure subjective recycling norms of preschool teachers on a 7-point Likert scale. Table 4.3 demonstrates the frequency and percentages of items of subjective norms regarding recycling with mean and standard deviation values for each item.

As indicated in Table 4.3, the total mean score of subjective norms regarding recycling scale has a higher value than the mid-point of 3.5, showing that participant preschool teachers perceive social pressure regarding recycling with a standard deviation of 1.33 (M= 5.59, SD=1.33). In other words, a considerable number of participants reported that people the participant preschool teachers value their opinions support those teachers to recycle (87.1%), and people who are important for the participant preschool teachers expect them to recycle (73.4%). On the other hand, few participant preschool teachers reported that people they value do not support them to recycle (5.1%), while 7.7 % of the participants were undecided on this subject. Similarly, the participant preschool teachers reported that people who are important to them do not expect them to recycle (13.7%), while others reported that they are undecided on this subject (12.8%).

Table 4. 3

Frequency Distribution, Mean, and Standard Deviation of Subjective Norms regarding Recycling

Items	7		6		5		4		3		2		1			
	F	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
People I value their opinions support me to recycle	258	44.2	148	25.3	103	17.6	45	7.7	15	2.6	6	1	9	1.5	5.92	1.31
People who are important to me expect me to recycle	166	28.4	121	20.7	142	24.3	75	12.8	39	6.7	18	3.1	23	3.9	5.26	1.61
Total															5.59	1.33

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Strongly Agree, 6= Agree, 5=Somewhat agree, 4=Undecided, 3=Somewhat disagree, 2=Disagree, 1= Strongly disagree

4.2.3. Perceived Behavioral Control over Recycling

Ajzen (1991) defined perceived behavioral control as the extent of how much easy or difficult to perform a behavior is perceived by an individual. On this basis, in this study perceived behavioral control over recycling refers to ease or difficulty of recycling perceived by the preschool teachers. In order to measure the perceived behavioral control of the preschool teachers over recycling, three items were used on a 7-point Likert scale. Table 4.4 illustrates the frequency and percentages of items of perceived behavioral control over recycling with mean and standard deviation values for each item.

As demonstrated in Table 4.4, the total mean score of perceived behavioral control over recycling scale is above the value of the mid-point of 3.5, indicating that participant preschool teachers perceive recycling as easy with a standard deviation of .82 (*M*= 5.84, *SD*=.82). To put it in a different way, major parts of the participants reported that it was easy for them to recycle the recyclable materials (paper, glass, plastic etc.) regularly in the upcoming months (92.8%), while there was not any participant who reported that it was hard for them to recycle the recyclable materials (paper, glass, plastic etc.) regularly in the upcoming months. However, there were 42 participants (7.2%) who reported that they were undecided about whether or not it was hard for them to recycle the recyclable materials (paper, glass, plastic etc.) regularly in the upcoming months. Moreover, the participants reported that it was under their control to recycle the recyclable materials (paper, glass, plastic etc.) regularly in the upcoming months (95%), while 29 participants (5%) reported that they were undecided whether or not it was under their control to recycle the recyclable materials (paper, glass, plastic etc.) regularly in the upcoming months. Furthermore, the participants reported that environmental factors cannot prevent them from recycling the recyclables materials (paper, glass, plastic etc.) regularly in the upcoming months (80.4%), whereas few participants (1.4%) reported that environmental factors can prevent them from recycling the recyclables materials (paper, glass, plastic etc.) regularly in the upcoming months and others (18.2%) were undecided on this subject.

Table 4. 4

Frequency Distribution, Mean, and Standard Deviation of Perceived Behavioral Control over Recycling

Items	7		6		5		4		3		2		1			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
It is hard for me to recycle the recyclable materials (paper, glass, plastic etc.) regularly in the upcoming months.*	0	0	0	0	0	0	42	7.2	125	21.4	211	36.1	206	35.3	5.99	.93
It is under my control to recycle the recyclables materials (paper, glass, plastic etc.) regularly in the upcoming months.	224	38.4	183	31.3	148	25.3	29	5	0	0	0	0	0	0	6.03	.91
Environmental factors can prevent me from recycling the recyclables materials (paper, glass, plastic etc.) regularly in the upcoming months.*	0	0	0	0	8	1.4	106	18.2	197	33.7	141	24.1	132	22.6	5.48	1.07
Total															5.84	.82

Note: Items with the sign of (*) refer to the reversed items. f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Strongly Agree, 6= Agree, 5=Somewhat agree, 4=Undecided, 3=Somewhat disagree, 2=Disagree, 1= Strongly disagree

4.2.4. Behavioral Beliefs regarding Recycling

Behavioral belief has been defined by Fishbein and Ajzen (1975) as beliefs regarding possible consequences of a behavior and review of these consequences. Within the scope of this study, more specifically, behavioral beliefs about recycling refer to the beliefs about the consequences of recycling of the preschool teachers. In this study, there were six items to measure behavioral beliefs of preschool teachers regarding recycling on a 7-point Likert scale. Table 4.5 points out the frequency and percentages of items of behavioral beliefs regarding recycling with mean and standard deviation values for each item.

According to Table 4.5, the total mean score of behavioral belief regarding recycling scale is considerable higher than the value of the mid-point of 3.5, indicating that behavioral beliefs of the participant preschool teachers about possible results of recycling were positive with a standard deviation of .29 (M= 6.90, SD=.29). In other words, most of the participant teachers believed that if they recycle, they would do something beneficial for society (99.7%), they would protect the environment (100%), they would contribute to the environmental health (100%), they would protect the natural resources (100%), they would reduce the environmental pollution (99.7%), and they would contribute to reduce acid rains and greenhouse effect (98.2%). In parallel with the result, there was not any participant who reported that if they recycle, they would do something unbeneficial for society, they would not protect the environment, they would not contribute to the environmental health, they would not protect the natural resources, they would not reduce the environmental pollution, and they would not contribute to reduce acid rains and greenhouse effect. However, there were few participants who were undecided on whether or not they would do something beneficial for society (.3%), they would reduce the environmental pollution (.2%), and they would contribute to reduce acid rains and greenhouse effect (1.7%), if they recycle.

Table 4. 5

Frequency Distribution, Mean, and Standard Deviation of Behavioral Belief regarding Recycling

Items	If I recycle,															
	7		6		5		4		3		2		1			
	F	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
I would do something beneficial for society	551	94.3	19	3.3	12	2.1	2	.3	0	0	0	0	0	0	6.92	.37
I would protect the environment	557	95.4	20	3.4	7	1.2	0	0	0	0	0	0	0	0	6.94	.28
I would contribute to the environmental health	555	95	24	4.1	5	.9	0	0	0	0	0	0	0	0	6.94	.27
I would protect the natural resources	556	95.2	22	3.8	6	1	0	0	0	0	0	0	0	0	6.94	.27
I would reduce the environmental pollution	548	93.8	26	4.5	8	1.4	1	.2	0	0	0	0	0	0	6.92	.37
I would contribute to reduce acid rains and greenhouse effect	485	83	44	7.5	45	7.7	10	1.7	0	0	0	0	0	0	6.72	.68
Total															6.90	.29

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Strongly Agree, 6= Agree, 5=Somewhat agree, 4=Undecided, 3=Somewhat disagree, 2=Disagree, 1= Strongly disagree

4.2.5. Outcome Evaluation of Behavioral Beliefs regarding Recycling

As a strength of behavioral beliefs, outcome evaluation of the preschool teachers' behavioral beliefs regarding recycling was measured through six items on a 7-point Likert scale. Table 4.6 shows the frequency and percentages of items of outcome evaluation of behavioral beliefs regarding recycling with mean and standard deviation values for each item.

As showed in Table 4.6, the total mean score of outcome evaluation regarding recycling scale is considerable higher than the value of the mid-point of 3.5, indicating how important the statements regarding recycling are for the participant teachers with a standard deviation of .39 (M= 6.88, SD=.39). This means that a good number of preschool teachers reported that recycling is important for them to do something beneficial for society (99%), to protect the environment (99.5%), to contribute to the environmental health (99.6%), to protect the natural resources (99.5%), to reduce the environmental pollution (99.5%), and to contribute to reduce acid rains and greenhouse effect (97.2%). Moreover, there were few participant preschool teachers who reported that recycling is not so important for them to do something beneficial for society (.5%), to protect the environment (.3%), to contribute to the environmental health (.3%), to protect the natural resources (.3%), to reduce the environmental pollution (.3%), and to contribute to reduce acid rains and greenhouse effect (.7%). Furthermore, there were a few teachers who were neutral on whether or not recycling is important for them to do something beneficial for society (.5%), to protect the environment (.2%), to contribute to the environmental health (.2%), to protect the natural resources (.2%), to reduce the environmental pollution (.2%), and to contribute to reduce acid rains and greenhouse effect (2.1%).

Table 4. 6

Frequency Distribution, Mean, and Standard Deviation of Outcome Evaluation regarding Recycling

Items	How important to you are the following statements regarding recycling?															
	7		6		3		4		5		2		1			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
Doing something beneficial for society	524	89.7	46	7.9	8	1.4	3	.5	3	.5	0	0	0	0	6.86	.49
Protecting the environment	542	92.8	34	5.8	5	.9	1	.2	2	.3	0	0	0	0	6.91	.39
Contributing to the environmental health	544	93.2	33	5.7	4	.7	1	.2	2	.3	0	0	0	0	6.91	.38
Protecting the natural resources	546	93.5	32	5.5	3	.5	1	.2	2	.3	0	0	0	0	6.92	.37
Reducing the environmental pollution	544	93.2	31	5.3	6	1	1	.2	2	.3	0	0	0	0	6.91	.40
Contributing to reduce acid rains and greenhouse effect	497	85.1	55	9.4	16	2.7	12	2.1	4	.7	0	0	0	0	6.76	.67
Total															6.88	.39

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Extremely important, 6=Very important, 5=Important, 4=Neutral, 3=Not so important, 2=Unimportant, 1= Extremely unimportant

4.2.6. Normative Belief regarding Recycling

Normative belief has been explained as a belief based on normative assumptions of others and motivation to comply with these assumptions (Fishbein & Ajzen, 1975). In light of this definition, normative belief regarding recycling in this study refer to the preschool teachers' beliefs regarding significant others' approval or disapproval of recycling. On this basis, there were four items to measure the normative belief systems of preschool teachers regarding recycling on a 7-point Likert scale. Table 4.7 indicates the frequency and percentages of items of normative beliefs regarding recycling with mean and standard deviation values for each item in this scale.

According to Table 4.7, the total mean score of normative belief regarding recycling scale is above the value of the mid-point of 3.5, indicating preschool teachers' beliefs regarding significant others' approval of recycling with a standard deviation of 1.81 (M= 4.75, SD=1.81). In other words, most of the participant teachers reported local governments (60.5%), society (55.2%), apartment/site/dormitory managers (45.5%), and school administrators (71.1%) as significant others expecting them to recycle. On the other hand, there were other participants who reported that local governments (27.1%), society (28.4%), apartment/site/dormitory managers (39.4%), and school administrators (19%) did not expect them to recycle. Moreover, there were several participant teachers who were undecided on whether or not the local governments (12.3%), society (16.4%), apartment/site/dormitory managers (15.1%), and school administrators (9.9%) expected them to recycle.

Table 4. 7

Frequency Distribution, Mean, and Standard Deviation of Normative Beliefs regarding recycling

Items	People or institutions highlighted below expect me to recycle;															
	7		6		5		4		3		2		1			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
Local governments (municipality etc.)	199	34.1	76	13	78	13.4	72	12.3	44	7.5	47	8	68	11.6	4.83	2.12
Society	178	30.5	63	10.8	81	13.9	96	16.4	59	10.1	47	8	60	10.3	4.70	2.04
Apartment/site /dormitory managers	127	21.7	64	11	75	12.8	88	15.1	59	10.1	60	10.3	111	19	4.12	2.18
School administrators	249	42.6	95	16.3	71	12.2	58	9.9	36	6.2	30	5.1	45	7.7	5.33	1.95
Total															4.75	1.81

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Strongly Agree, 6= Agree, 5=Somewhat agree, 4=Undecided, 3=Somewhat disagree, 2=Disagree, 1= Strongly disagree

4.2.7. Motivation to Comply

As a strength of normative beliefs, motivation to comply of the preschool teachers' normative beliefs about recycling was measured through four items on a 7-point Likert scale. Table 4.8 demonstrates the frequency and percentages of items of motivation to comply of normative beliefs regarding recycling with mean and standard deviation values for each item.

As indicated in Table 4.8, the total mean score of motivation to comply scale is fairly higher than the value of the mid-point of 3.5, showing the strength of normative beliefs of the participant teachers with a standard deviation of 1.40 (M= 6.02, SD=1.40). To specify, the participant preschool teachers' beliefs regarding the importance of the expectations of significant others' approval of recycling was reported by them as local governments (84.9%), society (85.8%), apartment/site/dormitory managers (82.5%), and school administration (87.7%). On the other hand, there were other teachers reported that the expectations of local governments (8.7%), society (8%), apartment/site/dormitory managers (11.2%) and school administration (5.9%) regarding recycling were not significant for them. Furthermore, a number of teachers reported that they were neutral regarding how important to them the expectations of local governments (6.3%), society (6.2%), apartment/site/dormitory managers (6.3%), and school administration (6.5%) regarding recycling were.

Table 4. 8

Frequency Distribution, Mean, and Standard Deviation of Motivation to Comply

Items	How important to you are the expectations of the following people or institutions regarding recycling?															
	7		6		5		4		3		2		1			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
Local governments (municipality etc.)	344	58.9	86	14.7	66	11.3	37	6.3	19	3.3	16	2.7	16	2.7	6.01	1.54
Society	350	59.9	94	16.1	57	9.8	36	6.2	16	2.7	15	2.6	16	2.7	6.06	1.51
Apartment/site/dormitory managers	314	53.8	93	15.9	75	12.8	37	6.3	25	4.3	21	3.6	19	3.3	5.85	1.64
School administrators	373	63.9	89	15.2	50	8.6	38	6.5	11	1.9	11	1.9	12	2.1	6.19	1.40
Total															6.02	1.40

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Extremely important, 6=Very important, 5=Important, 4=Neutral, 3=Not so important, 2=Unimportant, 1= Extremely unimportant

4.2.8. Control Belief regarding Recycling

According to Ajzen (1991), control belief refers to the beliefs about the presence of factors which may restrain or promote the performance of a behavior. In this a narrow scope, control belief regarding recycling refers to the beliefs of preschool teachers about the existence of essential parameters for recycling. In this respect, there were five items to measure the control belief systems of preschool teachers regarding recycling on a 7-point Likert scale. Table 4.9 demonstrates the frequency and percentages of items of control beliefs regarding recycling with mean and standard deviation values for each item in this scale.

According to Table 4.9, the total mean score of motivation to comply scale is considerably higher than the value of the mid-point of 3.5, indicating the beliefs of the participant teachers about the existence of essential parameters for recycling with a standard deviation of .88 (M= 5.79, SD=.88). More specifically, most of them reported that they know which wastes are recyclable (97.8%), they know how to separate wastes for recycling (97%), they know into which bin to throw away wastes they separate (99.3%), regulations in their school contribute them to recycle (57.4%), and that there are recycle bins in their immediate vicinity (59.1%). However, there were other participants who reported that they do not know which wastes are recyclable (.5%), they do not know how to separate wastes for recycling (.6%), regulations in their school did not contribute them to recycle (30.5%), and there were not recycle bins in their immediate vicinity (28.6%). In addition, there were several participants who reported that they were undecided on whether they know which wastes are recyclable (1.7%), they know how to separate wastes for recycling (2.2%), they know into which bin to throw away wastes they separate (.7%), regulations in their school contribute them to recycle (12.2%), and there are recycle bins in their immediate vicinity (12.3%).

Table 4. 9

Frequency Distribution, Mean, and Standard Deviation of Control Belief regarding Recycling

Items	To what extent do you agree with the following items?															
	7		6		5		4		3		2		1			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
I know which wastes are recyclable	359	61.5	159	27.2	53	9.1	10	1.7	3	.5	0	0	0	0	6.47	.77
I know how to separate wastes for recycling	371	63.5	148	25.3	48	8.2	13	2.2	2	.3	2	.3	0	0	6.48	.81
I do not know into which bin to throw away wastes I separate*	0	0	0	0	0	0	4	.7	18	3.1	148	25.3	414	70.9	6.66	.57
Regulations in my school contribute me to recycle	160	27.4	88	15.1	87	14.9	71	12.2	51	8.7	50	8.6	77	13.2	4.62	2.11
There are recycle bins in my immediate vicinity	171	29.3	83	14.2	91	15.6	72	12.3	45	7.7	46	7.9	76	13	4.69	2.11
Total															5.79	.88

Note: Item with the sign of (*) refers to the reversed items.

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Strongly Agree, 6= Agree, 5=Somewhat agree, 4=Undecided, 3=Somewhat disagree, 2=Disagree, 1= Strongly disagr

4.2.9. Power of Control

As a strength of control beliefs, power of control was measured through five items on a 7-point Likert scale. Table 4.10 illustrates the frequency and percentages of items of power of control of control beliefs regarding recycling with mean and standard deviation values for the corresponding items.

As indicated in Table 4.10, the total mean score of motivation to comply scale is quite higher than the value of the mid-point of 3.5, showing the strength of power of control with a standard deviation of .57 (*M*= 6.76, *SD*=.57). More specifically, the preschool teachers reported knowing which wastes are recyclable (88.4%), knowing how to separate wastes for recycling (97.3%), knowing into which bin to throw away wastes they separate (97%), regulations in their school (98.2%), and the existence recycle bins in their immediate vicinity (97.8%) contributed to their recycling behavior. On the other hand, several participant teachers reported that knowing which wastes are recyclable (1%), knowing how to separate wastes for recycling (.8%), knowing into which bin to throw away wastes they separate (1.2%), regulations in their school (0.4%), and the existence recycle bins in their immediate vicinity (.7%) did not contribute to their recycling behavior. What's more, few preschool teachers reported that they were undecided on whether knowing which wastes are recyclable (1.5%), knowing how to separate wastes for recycling (1.9%), knowing into which bin to throw away wastes they separate (1.7%), regulations in their school (1.5%), and the existence recycle bins in their immediate vicinity (1.5%).

Table 4. 10

Frequency Distribution, Mean, and Standard Deviation of Power of Control

Items	Statements cited below contribute me to recycle															
	7		6		5		4		3		2		1			
	F	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
Knowing which wastes are recyclable	493	84.4	61	10.4	15	2.6	9	1.5	1	.2	2	.3	3	.5	6.74	.76
Knowing how to separate wastes for recycling	505	86.5	51	8.7	12	2.1	11	1.9	2	.3	1	.2	2	.3	6.77	.71
Knowing into which bin to throw away wastes I separate	492	84.2	59	10.1	16	2.7	10	1.7	2	.3	4	.7	1	.2	6.73	.76
Regulations in my school	505	86.5	50	8.6	18	3.1	9	1.5	1	.2	0	0	1	.2	6.79	.63
Existence of recycle bins in my immediate vicinity	504	86.3	53	9.1	14	2.4	9	1.5	1	.2	1	.2	2	.3	6.78	.69
Total															6.76	.57

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Strongly Agree, 6= Agree, 5=Somewhat agree, 4=Undecided, 3=Somewhat disagree, 2=Disagree, 1= Strongly disagree

4.2.10. Moral Norms regarding Recycling

According to Poskus (2015), moral norm refers to one's own beliefs and demand for exhibiting a specific behavior (Poskus, 2015). Within the scope of this study, moral norms refer to the preschool teachers' beliefs and demands for recycling. Herein, there were five items to measure the moral norms of preschool teachers regarding recycling on a 7-point Likert scale. Table 4.11 demonstrates the frequency and percentages of items of moral norms regarding recycling with mean and standard deviation values for each item.

As indicated in Table 4.11, the total mean score of moral norm scale (M= 6.40) is fairly higher than the value of the mid-point of 3.5, indicating the preschool teachers' beliefs and demands for recycling with a standard deviation of .67. To specify, the participant teachers reported in terms of moral norms about recycling that they believe in the necessity of not wasting something which can be reused (98.3%), not recycling their wastes is wrong for them (93.6%), they feel guilty unless they do not recycle their wastes (90.8%), not recycling contradicts with their principles (85.1%), and everyone should share the responsibility for recycling waste (98%). Correspondingly, there was not any participant preschool teacher who reported that they do not believe in the necessity of not wasting something which can be reused. On the other hand, there were teachers who reported that not to recycling their wastes is not wrong for them (.9%), they do not feel guilty unless they do not recycle their wastes (.2%), not recycling does not contradict with their principles (4.4%), and everyone should not share the responsibility for recycling waste (.2%). In addition, there were other teachers who were undecided on whether or not they believe in the necessity of not wasting something which can be reused (1.7%), not recycling their wastes is wrong for them (5.5%), they feel guilty unless they do not recycle their wastes (9.1%), not to recycle contradicts with their principles (10.4%), and everyone should share the responsibility for recycling waste (1.9%).

Table 4. 11

Frequency Distribution, Mean, and Standard Deviation of Moral Norms regarding Recycling

Items	7		6		5		4		3		2		1			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
I believe in the necessity of not wasting something which can be reused	491	84.1	60	10.3	23	3.9	10	1.7	0	0	0	0	0	0	6.77	.60
Not to recycle my wastes is wrong for me	405	69.3	104	17.8	38	6.5	32	5.5	5	.9	0	0	0	0	6.49	.90
I feel guilty unless I do not recycle my wastes	302	51.7	137	23.5	91	15.6	53	9.1	1	.2	0	0	0	0	6.17	1.01
Not to recycle contradicts with my principles	241	41.3	159	27.2	97	16.6	61	10.4	13	2.2	3	.5	10	1.7	5.86	1.30
Everyone should share the responsibility for recycling waste	481	82.4	58	9.9	33	5.7	11	1.9	1	.2	0	0	0	0	6.72	.67
Total															6.40	.67

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Strongly Agree, 6= Agree, 5=Somewhat agree, 4=Undecided, 3=Somewhat disagree, 2=Disagree, 1= Strongly disagree

4.2.11. Convenience regarding Recycling

In a broad sense, inconvenience/convenience refers to the extent to be convenient for engaging in a behavior (Ajzen, 1991). From a more specific perspective, on the other hand, it refers to the preschool teachers' belief about how much hassle it is for them to recycle (Phillippsen, 2015). In this regard, there were three items to measure the convenience of preschool teachers regarding recycling on a 7-point Likert scale. Table 4.12 shows the frequency and percentages of items of convenience regarding recycling with mean and standard deviation values for each item.

According to Table 4.12, the total mean score of convenience regarding recycling scale is higher than the value of the mid-point of 3.5, indicating the preschool teachers' beliefs about how much hassle it is for them to recycle with a standard deviation of .73 (*M*= 6.50, *SD*=.73). To specify, the participant teachers reported that they do not believe that recycling is time-consuming (95.5%), they do not believe that recycling is not practical (94.6%), and they do not believe that recycling is hard to engage in (96.4%). In other words, there was not any participant teacher who reported that they believe that recycling is time-consuming, not practical, or hard to engage in. However, there existed several reachers who were undecided on whether they believe that recycling is time-consuming (4.5%), not practical (5.5%), or hard to engage in (3.6%).

Table 4. 12

Frequency Distribution, Mean, and Standard Deviation of Convenience regarding Recycling

	7		6		5		4		3		2		1			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
I believe that recycling is time-consuming*	0	0	0	0	0	0	26	4.5	50	8.6	89	15.2	419	71.7	6.54	.83
I believe that recycling is not practical*	0	0	0	0	0	0	32	5.5	63	10.8	99	17	390	66.8	6.45	.89
I believe that recycling is hard to engage in*	0	0	0	0	0	0	21	3.6	67	11.5	84	14.4	412	70.5	6.52	.83
Total															6.50	.73

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Strongly Agree, 6= Agree, 5=Somewhat agree, 4=Undecided, 3=Somewhat disagree, 2=Disagree, 1= Strongly disagree

4.2.12. Past Recycling Behavior

Past recycling behavior or recycling habit was defined by Phillippsen (2015) as recycling that took place during the last year (Phillippsen, 2015). In order to measure the past recycling behavior of preschool teachers, five items were used in the corresponding scale on a 7-point Likert scale. Table 4.13 presents the frequency and percentages of items of past recycling behavior with mean and standard deviation values for each item in this scale.

According to Table 4.13, the total mean score of past recycling behavior scale is higher than the value of the mid-point of 3.5, indicating the preschool teachers' recycling behavior during the last year with a standard deviation of 1.45 (M= 5.12, SD=1.45). More specifically, the participant teachers reported that they recycled paper (83.7%), glass bottle (73.2%), plastic bottle and plastics (41.2%), battery (63.6%), and aluminum box (70.1%) over the past year. However, there were a considerable number of teachers who reported that they did not frequently recycle paper (7.7%), glass bottle (11.1%), plastic bottle or plastics (40.4%), battery (24.7%), and aluminum box (21%) over the past year. Furthermore, several teachers reported that they occasionally recycle paper (8.6%), glass bottle (6.5%), plastic bottle or plastics (7.2%), battery (11.6%), and aluminum box (8.9%) over the past year.

Table 4. 13

Frequency Distribution, Mean, and Standard Deviation of Past Recycling Behavior

Items	Please, specify how frequent do you recycle the materials written below over the past year.															
	7		6		5		4		3		2		1			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
Paper	303	51.9	107	18.3	79	13.5	50	8.6	20	3.4	12	2.1	13	2.2	5.91	1.48
Glass bottle	122	20.9	67	11.5	54	9.2	38	6.5	1	.2	30	5.1	34	5.8	5.41	1.85
Plastic bottle, plastics	62	10.6	79	13.5	65	11.1	42	7.2	1	.2	66	11.3	169	28.9	3.69	2.27
Battery	181	31	98	16.8	92	15.8	68	11.6	44	7.5	47	8	54	9.2	4.91	2.01
Aluminum box	258	44.2	95	16.3	56	9.6	52	8.9	35	6	41	7	47	8	5.30	2.02
Total															5.12	1.45

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Always, 6=Almost always, 5=Generally, 4=Occasionally, 3=Every once in a while, 2=Rarely, 1=Never

4.2.13. Behavioral Intention regarding Recycling

Intention has been defined as the individual motivation to engage or not to engage in a behavior (Ajzen, 1998). Based on the definition, recycling intention refers to the likelihood of recycling evaluated by the preschool teachers within the scope of this study. In this regard, there were two items to measure the behavioral intention of preschool teachers regarding recycling on a 7-point Likert scale. Herein, the frequency and percentages of items of recycling intention with mean and standard deviation values for each item are presented Table 4.14 below.

According to Table 4.14, the total mean score of intention regarding recycling scale is higher than the value of the mid-point of 3.5, indicating the preschool teachers' likelihood of recycling with a standard deviation of 1.15 (M= 5.52, SD=1.15). As indicated in Table 4.14, the participant preschool teachers reported that they will try to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months (83.4%), and they plan to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months (75.5%). However, there existed few participant teachers reported that they will not try to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months (3.9%), and they do not plan to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months (7.5%). Moreover, some of the participant preschool teachers reported that they were undecided about whether they will try to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months (12.7%), and they plan to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months (17%).

Table 4. 14

Frequency Distribution, Mean, and Standard Deviation of Recycling Intention

Items	7		6		5		4		3		2		1			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
I will try to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months	166	28.4	175	30	146	25	74	12.7	20	3.4	3	.5	0	0	5.66	1.15
I plan to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months	125	21.4	171	29.3	145	24.8	99	17	33	5.7	9	1.5	2	.3	5.38	1.26
Total															5.52	1.15

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Strongly Agree, 6= Agree, 5=Somewhat agree, 4=Undecided, 3=Somewhat disagree, 2=Disagree, 1= Strongly disagree

4.2.14. Current Recycling Behavior

Recycling has been defined as the proper way of disintegrating the collected wastes into raw materials to be used to produce new output products, to conserve potentially beneficial resources and to lessen the amount of solid wastes in landfills (EPA, 2013). In order to measure recycling behaviors of preschool teachers, a scale including five items were used on a 7-point Likert scale. Table 4.15 demonstrates the frequency and percentages of items of current recycling behavior with mean and standard deviation values for each item.

According to Table 4.15, the total mean score of current recycling behavior scale is higher than the value of the mid-point of 3.5, illustrating the preschool teachers' recycling behavior at current times with a standard deviation of 1.55 (M= 4.96, SD=1.55). According to the results, the participant teachers reported that they recycled paper (64.5%), glass bottle (73.9%), plastic bottle and plastics (80.4%), battery (70.5%), and aluminum box (39.3%) recently. However, there were a considerable number of teachers who reported that they did not frequently recycle paper (21.4%), glass bottle (17.5%), plastic bottle or plastics (12.9%), battery (19.8%), and aluminum box (49.7%) recently. Furthermore, several teachers reported that they occasionally recycle paper (12%), glass bottle (8.6%), plastic bottle or plastics (6.7%), battery (9.6%), and aluminum box (11.1%) recently.

Table 4. 15

Frequency Distribution, Mean, and Standard Deviation of Current Recycling Behavior

Items	Please, specify how frequent do you recycle the materials written below recently.															
	7		6		5		4		3		2		1			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	M	SD
Paper	195	33.4	105	18	88	15.1	70	12	43	7.4	38	6.5	45	7.7	5.08	1.94
Glass bottle	275	47	99	17	58	9.9	50	8.6	32	5.5	41	7	29	5	5.51	1.88
Plastic bottle, plastics	289	49.5	113	19.3	68	11.6	39	6.7	25	4.3	25	4.3	25	4.3	5.73	1.72
Battery	229	39.2	113	19.3	70	12	56	9.6	41	7	34	5.8	41	7	5.29	1.93
Aluminum box	88	15.1	67	11.5	74	12.7	65	11.1	43	7.4	64	11	183	31.3	3.58	2.26
Total															4.96	1.55

Note: f=Frequency, M=Mean, SD=Standard deviation

Note: 7=Always, 6=Almost always, 5=Generally, 4=Occasionally, 3=Every once in a while, 2=Rarely, 1=Never

4.3. Path Analysis

In this section assumptions which ought to be checked before structural equation modeling analysis, and structural equation model was explicated by answering the research questions targeted in this study. More specifically, as a first step, assumptions, namely independence of observations, random sampling, linearity, multivariate normality and outliers, multi-collinearity and singularity, sample size and missing data, were satisfied prior to conducting a structural equation model. As a further step, the structural equation model was presented by considering the corresponding research questions.

4.3.1. Assumptions for Path Analysis Model

According to Reisinger and Turner (2003), path analysis or structural equation modeling requires several assumptions to be satisfied for a scientific research. These necessary assumptions to form a path analytic model or structural equation model have been specified as independence of observations, random sampling, linearity, multivariate normality and outliers, multi-collinearity and singularity, sample size and missing data.

4.3.1.1. Independence of Observations

Statistical independence of observations hinges upon the fact that observation of each subject ought to be independent from that of others (Fraenkel, Wallen & Hyun, 2012; McKnight, McKnight, Sidani & Figueredo, 2007). In order to fulfill the assumption of independence of observation, the data of the current study were obtained by the participant preschool teachers on an individual basis. In this respect, it was assumed for this study that each preschool teacher provided answers for the questionnaire irrespective of expressions of other participants.

4.3.1.2. Random Sampling

The basis of random sampling lies in the assumption that subjects of a study ought to have an equal and independent chance to be selected from a population (Fraenkel, Wallen & Hyun, 2012). Random sampling provides researchers with making a generalization based on the data obtained from a sample to the population (Graveter & Wallnau, 2007). For the current study, conveniently-selected data from the nine districts of Ankara, the capital city of Turkey, were utilized due to the practicability and applicability reasons.

4.3.1.3. Linearity

Tabachnick and Fidell (2013) suggest that it is appropriate for researchers to scrutinize a couple of randomly-selected scatterplot graphs rather than examining all scatterplots for bilateral constructs in order to check linearity assumption. For this reason, scatterplot diagrams which were selected randomly were checked for linearity by using graphs offered by IBM SPSS (see Appendix F). Since a considerable number of bilateral scatterplots did not indicate non-linearity based on the scatterplot graphs, this assumption was fulfilled within the research.

4.3.1.4. Multivariate Normality and Outliers

Normality of data is a critical assumption which should be satisfied before creating a structural model and before checking the corresponding fit indices. Even though data ought to be drawn in a normally-distributed way from a population, acquiring a data set which shows a normal distribution is mostly difficult to satisfy in reality (Kumar, 2015), especially in social science research (Micceri, 1989). Concordantly, data obtained in psychological research usually have a tendency to be positively skewed, and sometimes negatively skewed with regard to educational conditions (Suh, 2015).

Suh (2015) remarked that estimation method for a structural model ought to be decided carefully by researchers. Indeed, if a data set indicates nonnormality, then using an estimation method for normally-distributed data may result in biased fit indices for a model, and misleading values for standard errors of the parameter estimates (Hancock & Mueller, 2006). In this respect, Maximum Likelihood (ML) is one of the most frequently preferred estimation method which hinges on the assumption of multivariate normality (Kumar, 2015), while it is recommended as a preferable estimation method with a nonnormal data set, as well (Enders, 2001; Gold, Bentler & Kim, 2002). However, Robust Maximum Likelihood (MLR) is highly recommended as an estimation method by Satorra and Bentler (1994) in order to cope with nonnormality (Curran, West, & Finch, 1996; Suh, 2015).

Table 4. 16

Test of Univariate Normality for Continuous Variables

	Skewness		Kurtosis		Skewness and Kurtosis	
	Z-score	P-value	Z-score	P-value	Chi-square	P-value
ATT	-19.873	**.000**	13.479	**.000**	576.627	**.000**
SN	-4.772	**.000**	-1.646	.100	25.482	**.000**
PBC	-11.406	**.000**	7.445	**.000**	185.523	**.000**
Bb	-18.736	**.000**	12.355	**.000**	503.700	**.000**
Nb	-4.756	**.000**	-5.428	**.000**	52.082	**.000**
Cb	-2.405	**.016**	-9.500	**.000**	96.040	**.000**
MOR	-9.597	**.000**	3.350	**.001**	103.328	**.000**
CON	-11.082	**.000**	4.320	**.000**	141.480	**.000**
PAST	-6.001	**.000**	-0.622	.534	36.402	**.000**
INT	-4.815	**.000**	-1.844	.065	26.591	**.000**
CUR	-5.783	**.000**	-2.220	**.026**	38.371	**.000**

Note: $p<.05$

Univariate normality requires skewness and kurtosis values, ranging from -2 to +2 (George & Mallery, 2010). The corresponding skewness and kurtosis values of each construct in the current study are presented in Table 4.16. Considering the optimum range for skewness and kurtosis values for achieving univariate normality, this table illustrates that z-scores of the majority of the constructs were statistically significant

with regard to skewness and kurtosis (p<.05). Concurrently, Table 4.16 revealed that Chi-square value of each construct was statistically significant (p<.05). Therefore, it can be concluded that the data set indicates a non-normal distribution.

According to DeCarlo (1997), unless univariate normality is fulfilled in a data set, multivariate normality cannot be achieved for the corresponding data set. To specify, Kline (2011) highlighted that there are several conditions which should be actualized to satisfy multivariate normality in that not only each univariate distribution but also each variable should be distributed normally. In addition, linearity of bivariate scatterplots and homoscedasticity of residuals' distribution should be fulfilled (Kline, 2011). On this basis, LISREL enables researchers to obtain an overall test of multivariate normality for continuous variables, as presented in Table 4.17. According to the table, the test of multivariate normality indicated statistically significant Chi-square value of 5786.773 (p<.05) with statistically significant multivariate kurtosis value of 258.258 (z-score = 26.497), and statistically significant multivariate skewness value of 78.299 (z-score = 71.307). Based on the statistical results, it can be inferred that multivariate normality is violated for the present study.

Since specific information regarding outliers was presented in the section of preliminary data analysis, it was not handled within this section.

Table 4. 17

Test of Multivariate Normality for Continuous Variables

Skewness			Kurtosis			Skewness and Kurtosis	
Value	Z-score	P-value	Value	Z-score	P-value	Chi-square	P-value
78.299	71.307	**.000**	258.258	26.497	**.000**	5786.773	**.000**

Note: p<.05

4.3.1.5. Multicollinearity and Singularity

Tabahnick and Fidell (2007) recommended inverting matrices in the applications of path analysis within the scope of structural equation modeling. Thus, it was

emphasized that the corresponding matrices cannot be inverted when multicollinearity is not achieved in that dependent variables ought to show a moderate level of correlation with other dependent variables, with a correlation lower than .9 (Pallant, 2007). Singularity, on the other hand, is manifested if an independent variable covers other independent variables (Pallant, 2007). Within the scope of multicollinearity and singularity, SEM programs such as LISREL provide researchers with a message to warn them about whether the covariance matrix shows a multicollinearity or singularity (Tabahnick & Fidell, 2007). In this regard, it was recommended excluding the variable which brings about multicollinearity or singularity. Since a message presenting such an output was not obtained by means of LISREL, it was assumed that the covariance matrix does not cause a possible threat in terms of multicollinearity or singularity.

For more information, Table 4.18 indicated the correlations between the dependent variables in the present study. Indeed, Table 4.18 highlighted there was a correlation between dependent variables, ranging from .053 to .855, and all of these correlations were statistically significant (p<.01), except from the correlation between subjective norms and convenience. Not having found any information regarding a correlation between convenience and subjective norms in the extant literature might explain why these two dependent variables were not correlated. Since there was not a value exceeding the cut off value of 9 (p<.01) determined by Kline (2005), multicollinearity and singularity assumptions were satisfied for the data set.

Table 4. 18

Correlation Levels of Dependent Variables with Other Dependent Variables

	ATT	SN	PBC	MOR	CON	PAST	INT	CUR
ATT		.181**	.350**	.368**	.178**	.223**	.264**	.204**
SN	.181**		.283**	.337**	.053	.237**	.328**	.281**
PBC	.350**	.283**		.307**	.253**	.430**	.535**	.423**
MOR	.368**	.337**	.307**		.233**	.233**	.297**	.221**
CON	.178**	.053	.253**	.233**		.233**	.305**	.209**
PAST	.223**	.237**	.430**	.233**	.233**		.702**	.855**
INT	.264**	.328**	.535**	.297**	.305**	.702**		.709**
CUR	.204**	.281**	.423**	.221**	.209**	.855**	.709**	

**$p< 0.01$

4.3.1.6. Sample Size and Missing Data

Utilizing a large sample size is of vital importance in SEM analyses in order to deal with possible statistical problems caused by various factors such as parameter estimates and goodness of fit tests (Tabachnich & Fidell). In the extant literature on the subject of SEM analyses, there are a diversified amount of suggestions regarding the optimum number for sample size. While Kline (2005) asserted a sample size less than 100 as small, a sample size between 100 and 200 as medium, and a sample size above 200 as large. On the other hand, Nevitt and Hancock (2001) regarded a sample size less than 200 as problematic for standard errors, therefore they recommended that a sample size is between 500 and 1000 for conducting SEM analyses. Moreover, based on the complexity of a specified model, 5 to 10 cases per parameters estimated (Bentler & Chou, 1987), or 10 cases per variables (Nunnally, 1967) were suggested in the literature. In the current study, the sample size was 584 which points out a necessary number for conducting SEM analyses.

4.3.2. Path Analysis Modeling

The proposed model prepared in light of the relevant literature and presented in Chapter I formed the basis of the development of a path analytic structural model. In this respect, in order to test the hypothesized relationships within the proposed model

created based on the TPB, LISREL 8.8, which was developed by Jöreskog and Sörbom (2006), was used in the current study as a statistical software package program. More specifically, SIMPLIS command language was utilized in conjunction with the estimation method of Robust Maximum Likelihood (RML).

In the model there were mainly three latent independent variables or exogenous variables, namely Behavioral Beliefs (Bb), Normative Beliefs (Nb), Control Beliefs (Cb), Moral Norms (MOR), Convenience (CON), and Past Behavior (PAST). On the other hand, there were five latent dependent or endogenous variables in the model, namely Attitude toward Recycling (ATT), Subjective Norms (SN), Perceived Behavioral Control (PBC), Intention to Recycle (INT), and Current Recycling Behavior (CUR).

The proposed model was tested at first hand in order to decide whether the paths between the constructs were proper, or not. Figure 4.1 presented the t-values for each path between the corresponding variables.

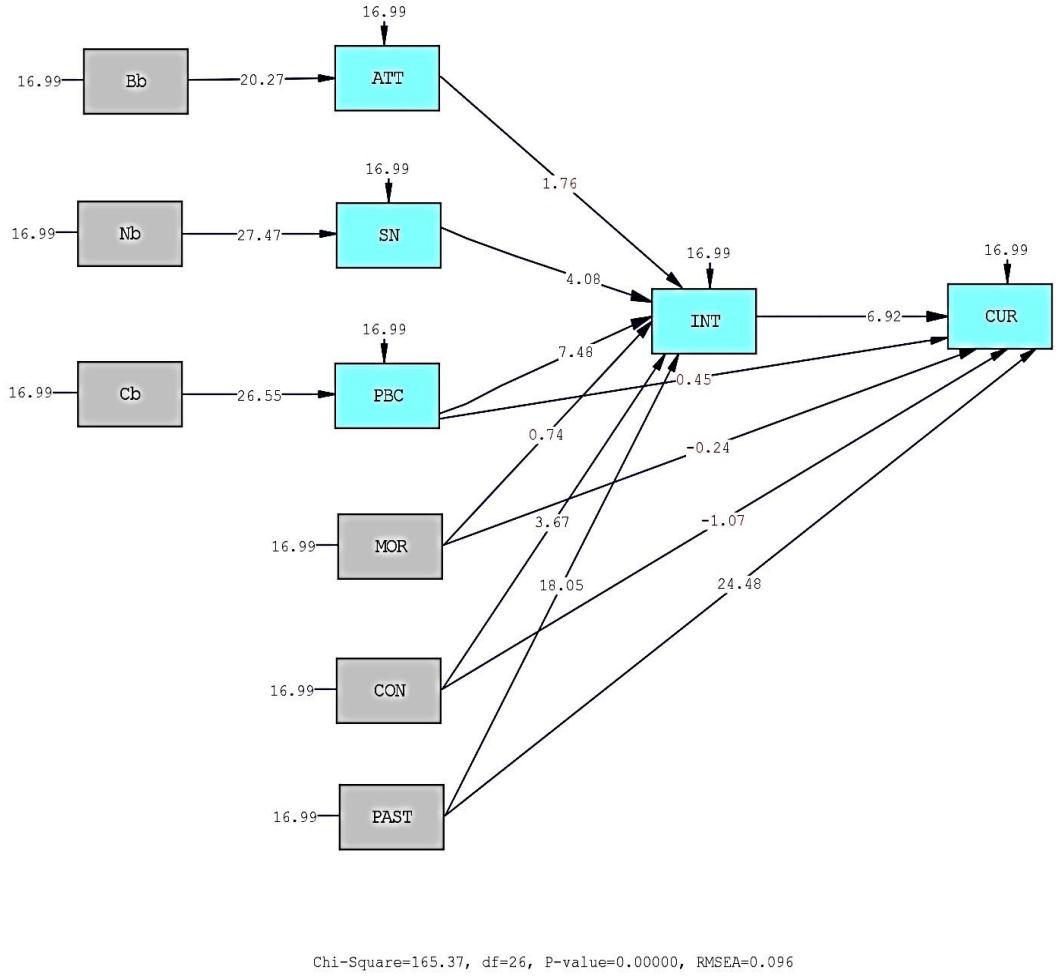


Figure 4. 1 T-values for the Proposed Model

Since it is important to check model fit indices in SEM analyses, the main indices of the final path analytic structural model were checked as illustrated in Table 4.19 which includes detailed information about Chi-square ($\chi 2$), Ratio of Chi-square to Degrees of Freedom ($\chi 2$/df), Root Mean Squared Error of Approximation (RMSEA), Standardized Root Mean Residual (SRMR), Comparative Fit Index (CFI), Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), Goodness-of-Fit Index (GFI), and Adjusted Goodness-of-Fit Index (AGFI).

Table 4. 19

Model Fit Indices of SEM for the Proposed Model

Fit Index	Model Values	Suggested Level	Reference
$\chi 2$*	165.37	-	-
$\chi 2$/df	6.36	< 5: good fit	Kelloway (1998)
RMSEA	.096	<.05: perfect fit, <.08: reasonable fit.	Schumacker & Lomax (1996)
		<.05: good fit <.08: adequate fit <.10: mediocre fit	Browne and Cudeck (1993)
SRMR	.062	<.08: good fit	Hu and Bentler (1998) Brown (2006)
CFI	.97	.95 < CFI < 1.00: perfect fit .90 < CFI <.95: reasonable fit	Schermelleh-Engel, Moosbrugger & Müller (2003)
NFI	.96	.95 < NFI < 1.00: perfect fit .90 < NFI <.95: reasonable fit	Schermelleh-Engel, Moosbrugger & Müller (2003)
		NFI >.95: good fit NFI >.90: acceptable fit	(Marsh & Grayson, 1995)
NNFI	.94	.95 < NNFI < 1.00: perfect fit .90 < NNFI <.95: reasonable fit	Schumacker & Lomax (1996)
GFI	.95	GFI > .90: acceptable fit	Marsh & Hau (1996)
AGFI	.88	AGFI > .90: acceptable fit	Hooper, Coughlan & Mullen (2008)

Note: *p < .05; $\chi 2$=Chi-square; $\chi 2$/df=Ratio of Chi-square to Degrees of Freedom; RMSEA=Root Mean Squared Error of Approximation; SRMR=Standardized Root Mean Residual; NFI= Normed Fit Index; NNFI=Non-Normed Fit Index; CFI=Comparative Fit Index; GFI=Goodness-of-Fit Index; AGFI=Adjusted Goodness-of-Fit Index.

Kline (2005) highlighted that at least Chi-square value, RMSEA, SRMR, and CFI should be reported by researchers while conducting structural equation modeling. According to Table 4.19, the proposed model had a Chi-square value of $\chi 2= 165.37$ ($p<.05$) with degrees of freedom df= 26. Since Chi-square hinges upon the assumption of the multivariate normality of the observed variables (Schermelleh-Engel, Moosbrugger & Müller, 2003), and it can be easily affected by sample size (Tabachnick & Fidell, 2007), the ratio of Chi-square to degrees of freedom is suggested to be used instead of the mere value of Chi-square (Kelloway, 1998). In this respect, the value for the ratio of Chi-square to degrees of freedom should be less than five for providing a good fit (Kelloway, 1998). For the final structural model, the ratio of Chi-square to degrees of freedom was $\chi 2/df= 6.36$, not indicating a good fit. On the other hand, RMSEA value was reported for the model as .096, indicating a mediocre fit to data (Brown & Cudeck, 1993), because of the lower value than the cut-off point .10. Furthermore, SRMR value which ought to be less than the value of .08 for a good fit (Hu & Bentler, 1998) was found as .062, indicating a good fit. Moreover, the value of CFI which was found as .97 indicated a perfect fit (Schermelleh-Engel, Moosbrugger and Müller, 2003).

In addition to the aforementioned model fit indices suggested by Kline (2005), it was recommended by several researchers (e.g. Benttler & Bonnett, 1980; Lance, Butts & Michels, 2006) reporting NFI value of the overall model fit. On this basis, as illustrated in Table 4.19, NFI value was .96 for the final model, indicating a perfect fit (Schermelleh-Engel, Moosbrugger & Müller, 2003) or a good fit (Marsh & Grayson, 1995). NNFI, on the other hand was proposed by Bentler and Bonnett (1980) for researchers to report in their studies. In this regard, NNFI value was found as .94, demonstrating a reasonable fit (Schumacker & Lomax, 1996). Besides, GFI which is related to the degree of a model fit (Jöreskog & Sörbom, 1993) was reported in the current study as .95, indicating an acceptable fit (Marsh & Hau, 1996). On the other hand,AGFI which is a step to preclude bias resulted in the complexity of a model

(Jöreskog & Sörbom, 1989) was reported as .88 for the final model, indicating an almost acceptable fit based on the criteria determined by Hooper, Coughlan and Mullen (2008). In light of the findings regarding the model fit indices of the final structural model, it was reported that the model showed a slightly acceptable fit to the corresponding dataset ($\chi 2/df = 6.36$, RMSEA = .096, SRMR = .062, CFI = .97; NFI = .97, NNFI = .94, GFI= .95; AGFI= .88). In other words, the data barely supported to the final model.

Although the model fit indexes of the proposed model were within an accepted range, the construct of past recycling behavior was removed from the model due to its violation of the discriminant validity which refers to the unique characteristics not seized by any other construct (Hair et al., 2010), as indicated section 3.5.1.3. The threat lying behind the situation is that the violation of discriminant validity poses a potential risk for the inferences which would be made based on the accuracy of structural model (Farrell, 2010). In this respect, in consideration of the recommendations of researchers on the necessity of a correlation between two constructs to be less than .85 (Kline, 2011) or less than 1, past recycling behavior measurement which indicated a .99 correlation with current recycling behavior was eliminated from the final model in order to obtain more accurate results. Similarly, the path between past recycling behavior and intention to recycle was eliminated from the final model because of its violation of the criteria determined by Hair et al. (2014) in that the square root of AVE value should be higher than the correlation between variables. Since in this case the AVE value of past recycling behavior (.71) was lower than the correlation between past recycling behavior and intention to recycle (β=.80), this path was problematic for the discriminant validity. For this reason, paths between past recycling behavior and intention, and past recycling behavior and current recycling behavior were removed from the next model structure. After the elimination process, the final version of the proposed model is presented in Figure 4.2.

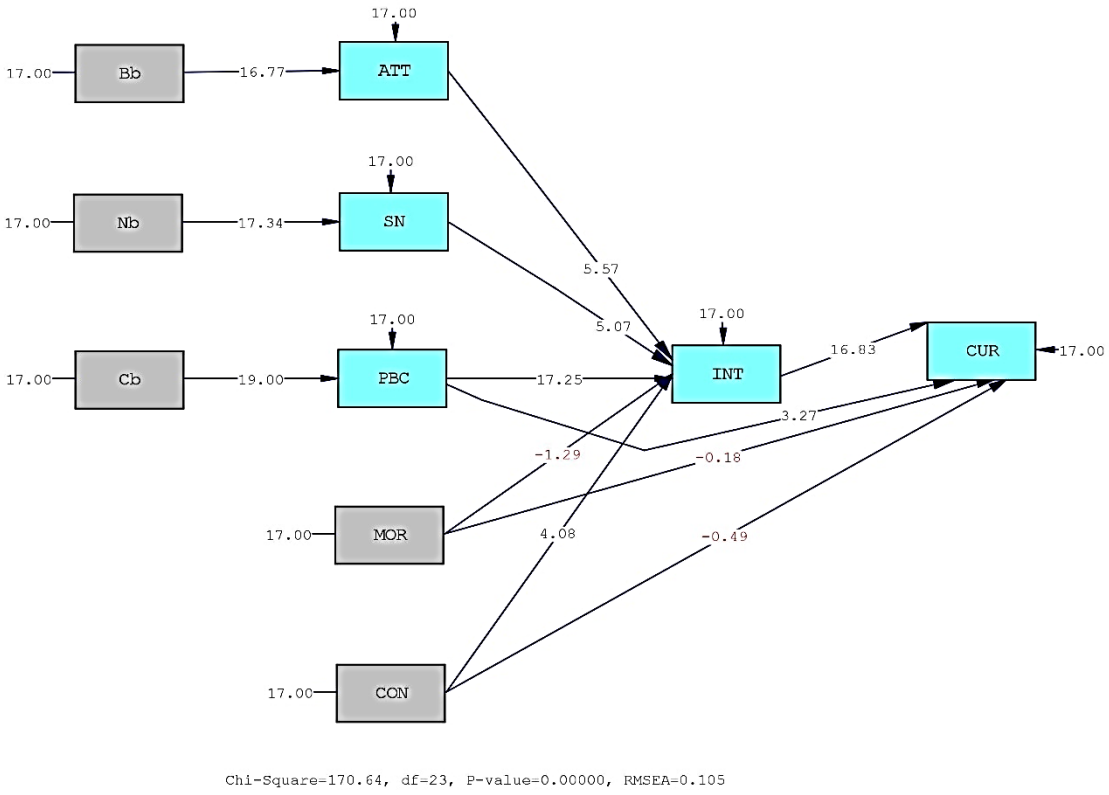


Figure 4. 2 Last Version of the Proposed Model

As can be seen in Table 4.20, the final version of the proposed model had a Chi-square value of $\chi 2 = 170.64$ ($p<.05$) with degrees of freedom df= 23. Moreover, the ratio of Chi-square to degrees of freedom was $\chi 2/df = 7.39$, beyond the accepted range for Kelloway (1998). Fyrthermore, RMSEA value was reported for the model as .105, indicating an almost mediocre fit to the data set in consideration of the criteria determined by Brown and Cudeck (1993). SRMR value which ought to be less than the value of .08 for a good fit (Hu & Bentler, 1998), on the other hand, was found as .0.075, indicating a good fit for Hu and Bentler (1998), and Brown (2006). In addition, the value of CFI which was found as .95 indicated a perfect fit (Schermelleh-Engel, Moosbrugger & Müller, 2003). Considering the NFI value, it was calculated as .94 for the final model, indicating a reasonable fit (Schermelleh-Engel, Moosbrugger & Müller, 2003) or an acceptable fit (Marsh & Grayson, 1995). NNFI, on the other hand,

was found as .90, demonstrating a reasonable fit (Schumacker & Lomax, 1996). What's more, GFI was reported as .94, indicating an acceptable fit (Marsh & Hau, 1996), while AGFI was reported as .87 for the final version of the proposed model, indicating an almost acceptable fit, according to Hooper, Coughlan and Mullen (2008).

On this basis, the model fit indices of the final version of the model were reported as that the model showed a slightly acceptable fit to the corresponding dataset ($\chi 2/df$ = 7.39, RMSEA = .105, SRMR = .075, CFI = .95; NFI = .94, NNFI = .90, GFI= .94; AGFI= .87).

Table 4. 20

Model Fit Indices of SEM for the Final Model

Fit Index	Model Values	Suggested Level	Reference
$\chi 2$*	170.64	-	-
$\chi 2/df$	7.39	< 5: good fit	Kelloway (1998)
RMSEA	.105	<.05: perfect fit, <.08: reasonable fit.	Schumacker & Lomax (1996)
		<.05: good fit <.08: adequate fit <.10: mediocre fit	Browne &Cudeck (1993)
SRMR	.075	<.08: good fit	Brown (2006)
CFI	.95	.95 < CFI < 1.00: perfect fit .90 < CFI <.95: reasonable fit	Schumacker & Lomax (1996)
NFI	.94	.95 < NFI < 1.00: perfect fit .90 < NFI <.95: reasonable fit	Schermelleh-Engel et al. (2003)
		NFI >.95: good fit NFI >.90: acceptable fit	Marsh & Grayson (1995)
NNFI	.90	.95 < NNFI < 1.00: perfect fit .90 < NNFI <.95: reasonable fit	Schumacker & Lomax (1996)
GFI	.94	GFI > .90: acceptable fit	Marsh & Hau (1996)
AGFI	.87	AGFI > .90: acceptable fit	Hooper et al. (2008)

Note: *p < .05; $\chi 2$=Chi-square; $\chi 2/df$=Ratio of Chi-square to Degrees of Freedom; RMSEA=Root Mean Squared Error of Approximation; SRMR=Standardized Root Mean Residual; NFI= Normed Fit Index; NNFI=Non-Normed Fit Index; CFI=Comparative Fit Index; GFI=Goodness-of-Fit Index; AGFI=Adjusted Goodness-of-Fit Index.

R.Q. 2: In what ways each cognitive construct of the TPB (behavioral, normative and control beliefs regarding recycling) associated with their corresponding psychological constructs (attitudes towards recycling, subjective recycling norms, and perceived behavioral control over recycling)?

According to the TPB, each psychological construct of the theory (i.e. attitude, subjective norm, and perceived behavioral control) is determined by a salient belief, namely behavioral belief, normative belief, and control belief, respectively. Besides, convenience about recycling was integrated into the current study as an indicator of perceived behavioral control in consideration of the extant literature. The relationships between these constructs were presented in the Figure 4.3 below.

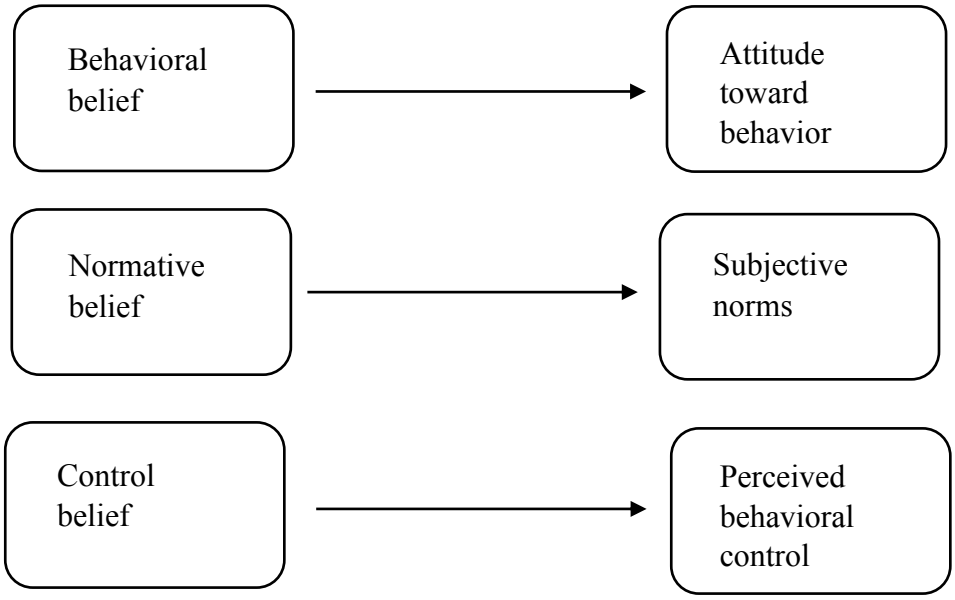


Figure 4. 3 The Relationship between the TPB Constructs and the Corresponding Salient Beliefs (Ajzen, 2005)

In order to be able to respond the second research question, H_0 and H_1 hypotheses presented below were considered.

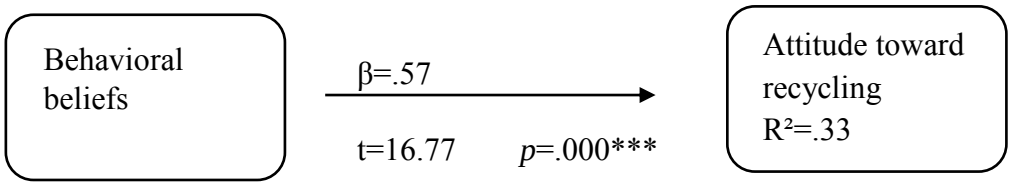
H_0 : There is not a statistically significant relationship between cognitive constructs of TPB (behavioral, normative and control beliefs regarding recycling), and their corresponding psychological constructs (attitudes towards recycling, subjective recycling norms, and perceived behavioral control over recycling).

H_1 : There is a statistically significant relationship between cognitive constructs of TPB (behavioral, normative and control beliefs regarding recycling), and their corresponding psychological constructs (attitudes towards recycling, subjective recycling norms, and perceived behavioral control over recycling).

In this respect, Figure 4.3 presents the t-values for each path between the corresponding variables. According to Jöreskog and Sörbom (1993), t-values refer to the ratio of an estimate to its standard error, and it is considered that a construct with a significant t-value have an impact on the relevant dependent variable. In this respect, t-values ‘‘smaller than 1.96 in magnitude’’ are not accepted as significant in LISREL software within the range of alpha value (α) of .05 (Jöreskog & Sörbom, 1993, p.107). The results of the analyses illustrated that there was a strong and positive relationship between behavioral beliefs of preschool teachers regarding recycling and their attitude toward recycling, between their normative beliefs regarding recycling and subjective recycling norms perceived by them, and between their control beliefs regarding recycling and their perceived behavioral control over recycling.

More specifically, behavioral beliefs of preschool teachers regarding recycling were found as a significant determinant of their attitudes toward recycling (β=.57). Furthermore, their behavioral beliefs regarding recycling considerably influenced their attitude toward recycling (t=16.77, p=.000). For this reason, H_0 hypothesis was rejected based on the existence of a statistically significant relationship between

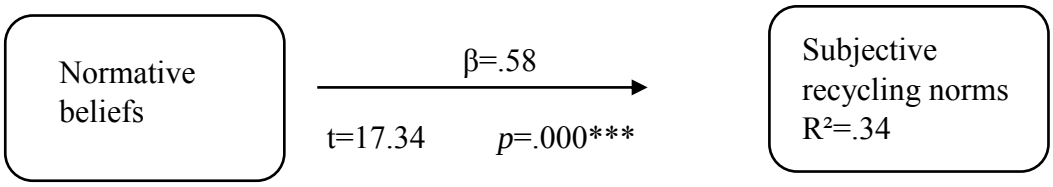
behavioral beliefs of preschool teachers regarding recycling and their attitude toward recycling. Moreover, SEM analyses demonstrated that the six behavioral belief items accounted for 33% of the variance in the attitude of preschool teachers toward recycling. Figure 4.4 presented the path including strength and the direction of the relationship between attitude of the participant preschool teachers and their behavioral beliefs about recycling.



*p < .05, **p < .01, ***p < .001

Figure 4. 4 Pathway from Behavioral Beliefs of Preschool Teachers to Their Attitude toward Recycling

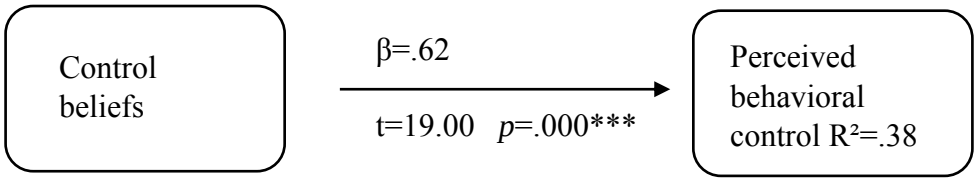
According to the results of the analyses, the relationship between normative beliefs of preschool teachers regarding recycling was found as a significant determinant of their subjective recycling norms (β=.58). Moreover, their normative beliefs regarding recycling considerably influenced their subjective norms regarding recycling (t=17.34, p=.000). Hence, H_0 hypothesis was rejected due to the existence of a statistically significant relationship between normative beliefs of preschool teachers regarding recycling and their subjective norms about recycling. Moreover, the analyses demonstrated that the four normative belief items accounted for 34% of the variance in the subjective norms of preschool teachers toward recycling. Figure 4.5 illustrated the path including strength and the direction of the relationship between subjective norms regarding recycling perceived by the participant preschool teachers and their normative beliefs about recycling.



*p < .05, **p < .01, ***p < .001

Figure 4. 5 Pathway from Normative Beliefs of Preschool Teachers to Their Subjective Recycling Norms

In addition, a strong relationship was found between control beliefs of preschool teachers regarding recycling and their perceived behavioral control over recycling (β=.62). Furthermore, their control beliefs were found as a significant determinant of their perceived behavioral control over recycling (t=19.00, p=.000). For this reason, H_0 hypothesis was rejected, since there existed a statistically significant relationship between control beliefs of preschool teachers regarding recycling and their perceived behavioral control over recycling. On this basis, Figure 4.6 indicated that the five control belief items accounted for 38% of the variance in the perceived behavioral control of preschool teachers over recycling.



*p < .05, **p < .01, ***p < .001

Figure 4. 6 Pathway from Control Beliefs of Preschool Teachers regarding Recycling to Their Perceived Behavioral Control over Recycling

R.Q. 3: How well preschool teachers' recycling intentions be explained by TPB variables (their attitudes towards recycling, subjective recycling norms, and perceived behavioral control over recycling), and additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling)?

According to Ajzen (2005), there attitude toward behavior, subjective norms, and perceived behavioral control are the major determinants of behavioral intention. In this respect, the relationship between each psychological construct of the TPB, namely attitude toward behavior, subjective norms, and perceived behavioral control, and behavioral intention was questioned. In addition, the relationship between the additional variables, namely moral norms, convenience, and past behavior and behavioral intention was investigated within the research question. The proposed relationship of these variables with intention to recycle were indicated in Figure 4.7.

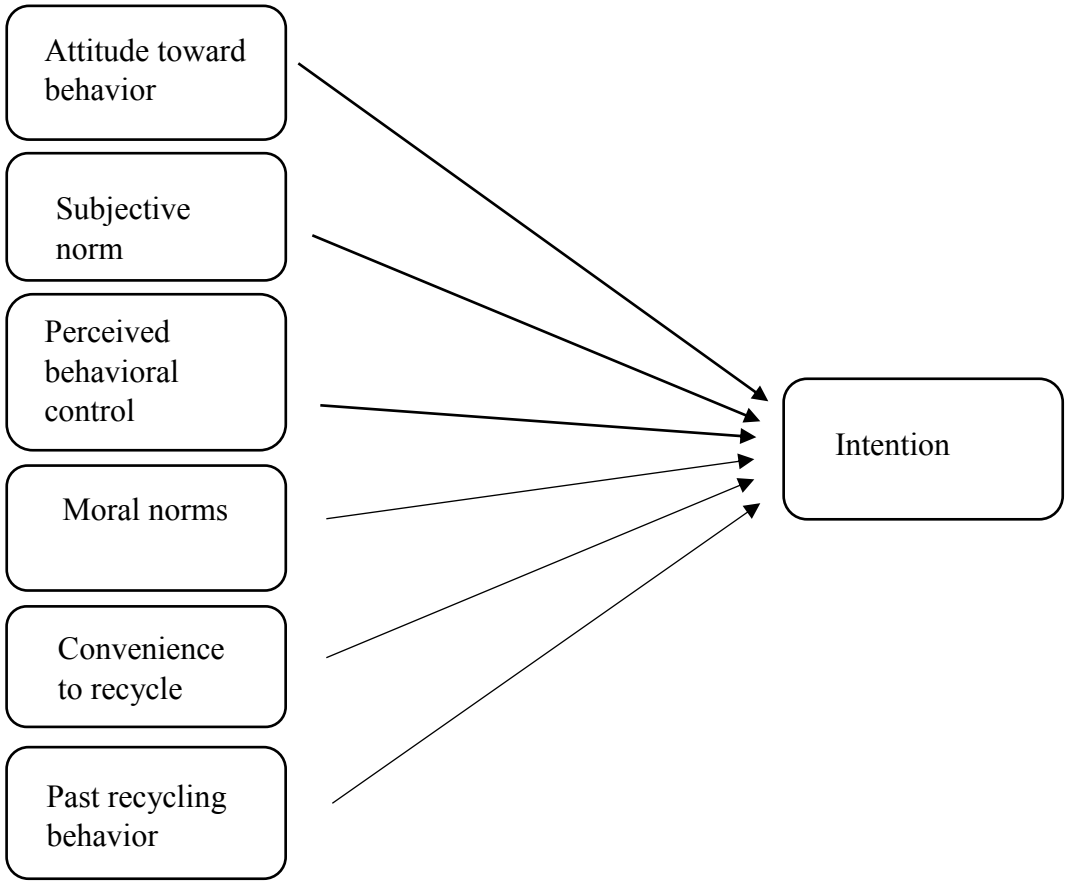


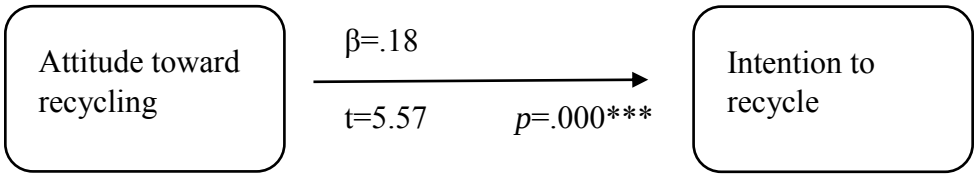
Figure 4. 7 Expected Paths from the TPB Variables and Additional Variables to Intention to Recycle

In order to be able to answer the research question, the corresponding H_0 and H_1 hypotheses were targeted.

> H_0 : The TPB variables (their attitudes towards recycling, subjective recycling norms, and perceived behavioral control over recycling), and additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling), are not significant determinants of preschool teachers' recycling intentions.

H_1 : The TPB variables (their attitudes towards recycling, subjective recycling norms, and perceived behavioral control over recycling), and additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling), are significant determinants of preschool teachers' recycling intentions.

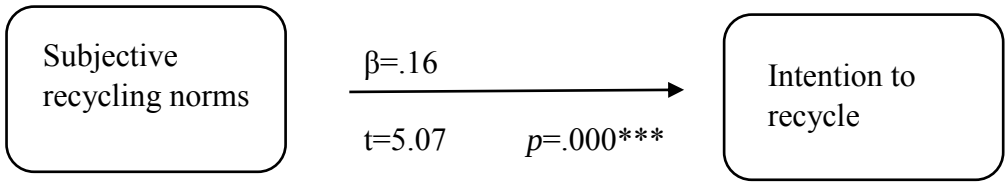
In the current study, SEM analyses indicated that attitudes of preschool teachers toward recycling contributed to the second highest contribution to their intention to recycle (β=.18). In addition, the path from attitude of preschool teachers toward recycling to their intention to recycle was statistically significant in the current model (t=5.57, p=.000), as presented in Figure 4.8. Hence, H_0 hypothesis was rejected, since there was a statistically significant relationship between attitude of preschool teachers toward recycling and their intention to recycle.



*p < .05, **p < .01, ***p < .001

Figure 4. 8 Pathway from Attitude of Preschool Teachers toward Recycling to Their Intention to Recycle

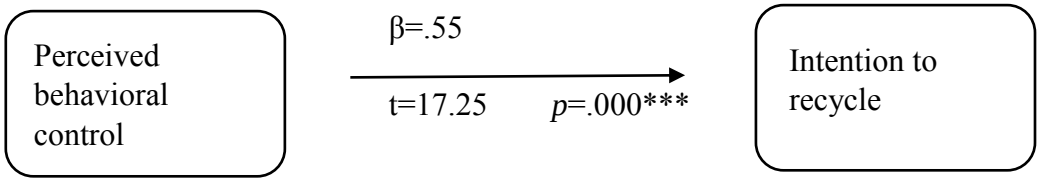
Moreover, it was found that subjective norms of preschool teachers made the third largest contribution to their intention to recycle (β=.16). Indeed, the path from their subjective norms regarding recycling to their intention to recycle was statistically significant in the current model (t=5.07, p=.000), as indicated in Figure 4.9. Thus, H_0 hypothesis was rejected, because there was a statistically significant relationship between the perceived subjective norms about recycling of preschool teachers and their intention to recycle.



*p < .05, **p < .01, ***p < .001

Figure 4. 9 Pathway from Subjective Recycling Norms of Preschool Teachers to Their Intention to Recycle

The relevant analyses demonstrated that perceived behavioral control of preschool teachers over recycling made the strongest contribution to the explanation of their intention to recycle (β=.55). In addition, the path from perceived behavioral control of preschool teachers over recycling to their intention to recycle demonstrated a significant path in the current model (t=17.25, p=.000), as illustrated in Figure 4.10. For this reason, H_0 hypothesis was rejected, since there was a statistically significant relationship between perceived behavioral control of preschool teachers over recycling and their intention to recycle.

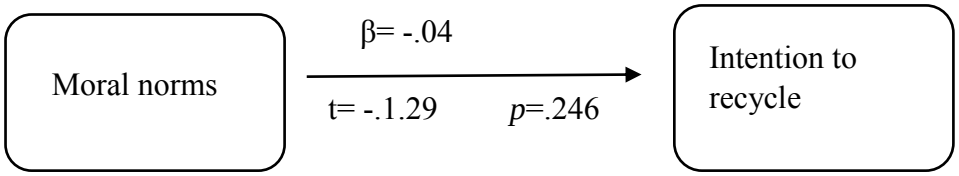


*p < .05, **p < .01, ***p < .001

Figure 4. 10 Pathway from Perceived Behavioral Control of Preschool Teachers over Recycling to Their Intention to Recycle

The relationship between moral recycling norms of preschool teachers and their intention to recycle was quite lower (β= -.04) than the relationship of other variables with the intention to recycle. Furthermore, the relationship between their moral norms regarding recycling and their intention to recycle was not significant (t= -.1.29,

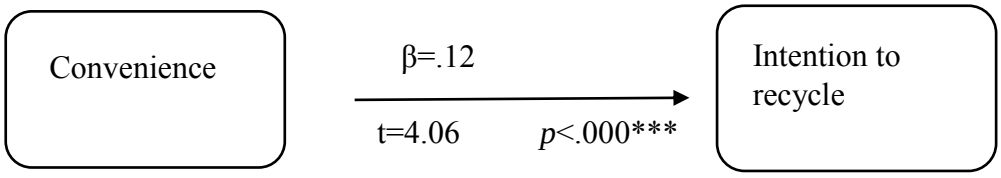
p=.246), as indicated in Figure 4.11. Therefore, H_0 hypothesis was retained, since there was not a statistically significant relationship between moral norms of preschool teachers about recycling and their intention to recycle.



*$p < .05$, **$p < .01$, ***$p < .001$

Figure 4. 11 Pathway from Moral Recycling Norms of Preschool Teachers to Their Intention to Recycle

The results of the analyses indicated that convenience of preschool teachers to recycle made slightly lower contribution to the explanation of their intention to recycle (β=.12). However, the path from convenience of preschool teachers to recycle to their intention to recycle was still significant in the current model (t=4.06, p<.000), as illustrated in Figure 4.12. Hence, H_0 hypothesis was rejected, since there was a statistically significant relationship between convenience of preschool teachers to recycle and their intention to recycle.



*$p < .05$, **$p < .01$, ***$p < .001$

Figure 4. 12 Pathway from Convenience of Preschool Teachers to Recycle to Their Intention to Recycle

As earlier explicated, past recycling behavior was eliminated from the final version of the proposed model because of its high correlation with the construct of intention to recycle which posed a threat for discriminant validity. For this reason, it was not included in the final model in order to answer the third research question. Except from the past recycling behavior, other variables included in the analyses of the structural model explained 44% of the intentions of participants to recycle. To specify, perceived behavioral control of preschool teachers over recycling made the largest contribution to their intention to recycle (β=.55, t=17.25), while their attitude toward recycling made the second highest contribution to their intention to recycle (β=.18, t=5.57). What's more, subjective norms of preschool teachers made the third strongest contribution to their intention to recycle (β=.16, t=5.07), whereas their convenience to recycle made the least contribution to the explanation of their intention to recycle (β=.12, t=4.06). On the other hand, moral norms did not contribute to the explanation of the intentions of preschool teachers to recycle (β= -.04 t= -1.29).

R.Q.4: How well preschool teachers' recycling behavior be explained by the TPB variables (recycling intentions, and perceived behavioral control over recycling), and the additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling)?

The present study put an effort to explain recycling behavior of preschool teachers by means of recycling intentions, perceived behavioral control over recycling, past recycling behavior, convenience for recycling, and moral norms regarding recycling. To specify, since in the extant literature there were several studies in which whether or not perceived behavioral control over a behavior directly predicts a specific behavior, the current study investigated the existence of a possible relationship between these two variables with regard to recycling. In addition to the predictive ability of perceived behavioral control, possible relationships of the additional variables, namely moral norms, convenience, and past behavior with the

corresponding behavior were examined within the fourth research question. The proposed relationships of the abovementioned variables with intention to recycle were indicated in Figure 4.13.

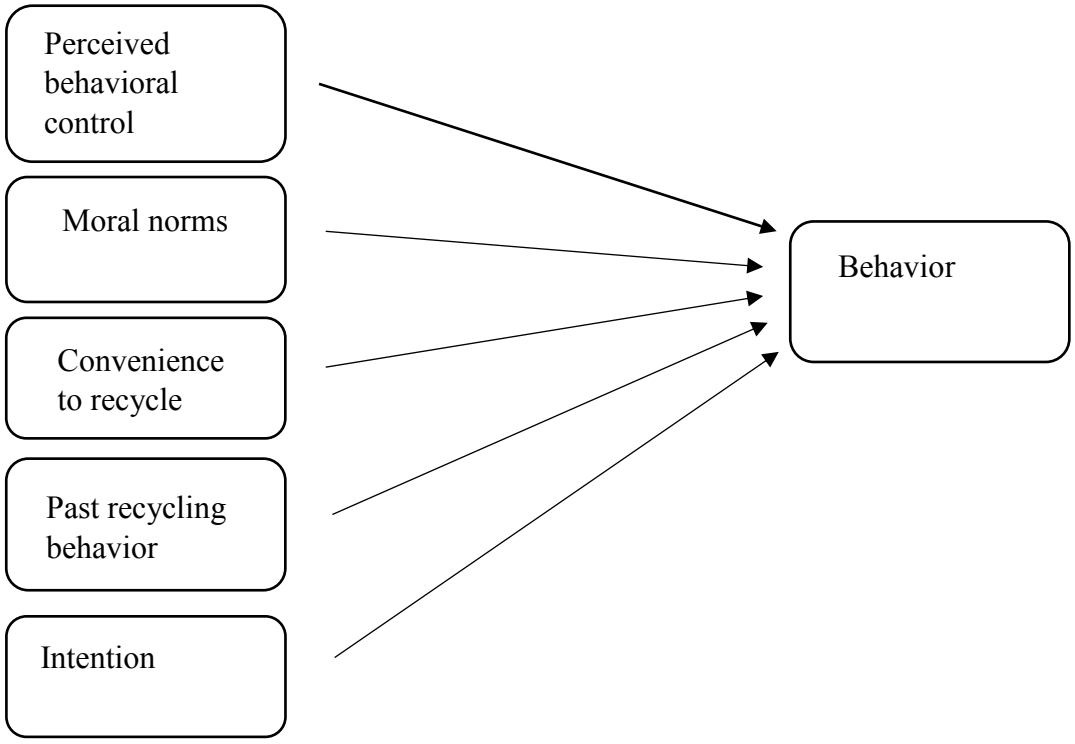


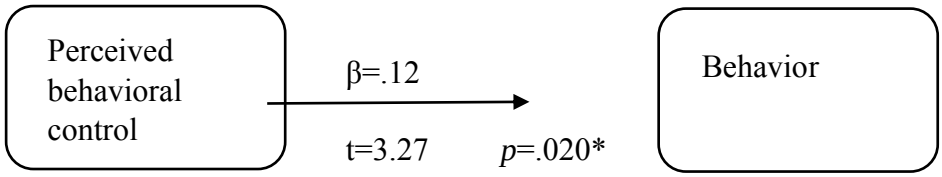
Figure 4. 13 Expected Paths from the TPB Variables and Additional Variables to Recycling Behavior

In order to be able to answer the research question, the corresponding H_0 and H_1 hypotheses were targeted.

> H_0 : The TPB variables (behavioral intention to recycle, and perceived behavioral control over recycling), and additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling) are not significant determinants of preschool teachers' recycling behaviors.

H_1 : The TPB variables (behavioral intention to recycle, and perceived behavioral control over recycling), and additional variables (past recycling behavior, convenience for recycling, and moral norms regarding recycling) are significant determinants of preschool teachers' recycling behaviors.

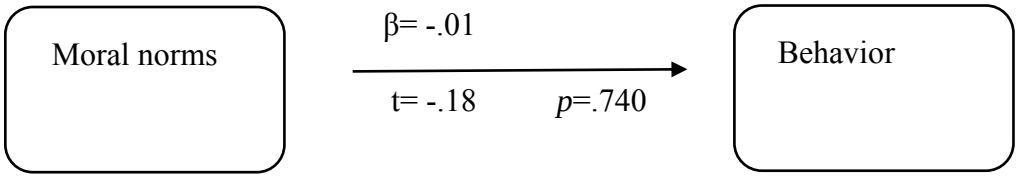
The results of the relevant analyses illustrated that perceived behavioral control of preschool teachers over recycling made the second strongest contribution to the explanation of their recycling behavior (β=.12). In addition, the path from perceived behavioral control of preschool teachers over recycling to their recycling behavior was found statistically significant in the current model (t=3.27, p=.020), as illustrated in Figure 4.14. For this reason, H_0 hypothesis was rejected, due to the existence of a statistically significant relationship between perceived behavioral control of preschool teachers over recycling and their recycling behavior.



*p < .05, **p < .01, ***p < .001

Figure 4. 14 Pathway from Perceived Behavioral Control of Preschool teachers over Recycling to Their Current Recycling Behavior

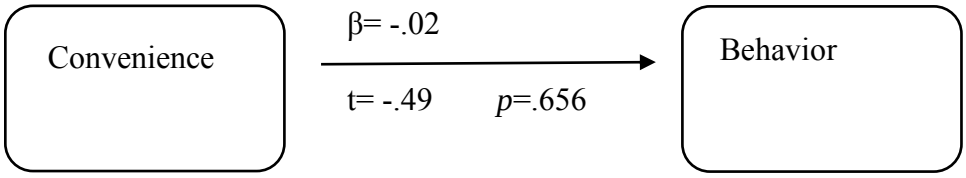
Moreover, moral norms of preschool teachers regarding recycling did not contribute to the explanation of their recycling behavior (β= -.01). In addition, the path from moral norms of preschool teachers about recycling to their recycling behavior did not illustrate a statistically significant path in the current model (t= -.18, p=.740), as presented in Figure 4.15. Hence, H_0 hypothesis was retained, due to the lack of a statistically significant relationship between moral norms of preschool teachers regarding recycling and their recycling behavior.



*$p < .05$, **$p < .01$, ***$p < .001$

Figure 4. 15 Pathway from Moral Norms of Preschool Teachers about Recycle to Their Current Recycling Behavior

Analyses demonstrated that convenience of preschool teachers did not contribute to their recycling behavior (β= -.02). Furthermore, convenience of preschool teachers to recycle was not significant determinant of teachers' recycling behavior (t= -.49, p=.656), as presented in Figure 4.16. Hence, H_0 hypothesis was retained, since there was not a statistically significant relationship between convenience of preschool teachers to recycle and their recycling behavior.

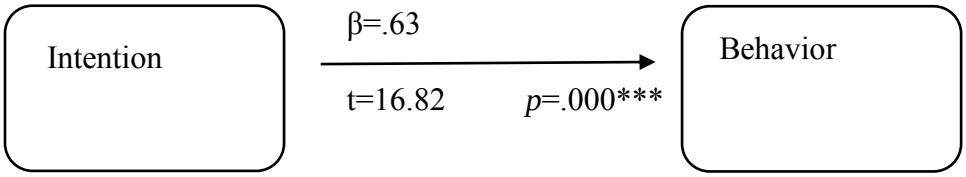


*$p < .05$, **$p < .01$, ***$p < .001$

Figure 4. 16 Pathway from Convenience of Preschool Teachers to Recycle to Their Current Recycling Behavior

Since past recycling behavior was strongly correlated with the current recycling behavior, resulting in the violation of discriminant validity, it was not included in the research question based on the final version of the proposed model.

The results of the relevant analyses demonstrated that intention of preschool teachers to recycle made the largest unique contribution to their recycling behavior (β=.63). In addition, the path from intention of preschool teachers to recycle to their recycling behavior was found statistically significant in the current model (t=16.82, p=.000), as presented in Figure 4.17. Thus, H_0 hypothesis was rejected, owing to the existence of a statistically significant relationship between recycling intention of preschool teachers and their recycling behavior.



*p < .05, **p < .01, ***p < .001

Figure 4. 17 Pathway from Intention of Preschool Teachers to Recycle to Their Current Recycling Behavior

The results of the analyses conducted with the perceived behavioral control, moral norms, convenience, and intention to recycle, and recycling behavior illustrated that 50% of current recycling behavior of preschool teachers could be explained by these variables. More specifically, intention of preschool teachers to recycle made the strongest contribution to their recycling behavior (β=.63, t=16.82), whereas perceived behavioral control of preschool teachers over recycling made the second largest contribution to their recycling behavior (β=.12, t=3.27). On the other hand, convenience to recycle did not contribute to the explanation of their recycling behavior (β= -.02, t= -.49). In addition, moral norms of preschool teachers regarding recycling did not contribute to the explanation of their recycling behavior (β= -.01 t= -.18).

Cohen (1988) recommended researchers utilizing effect size (f^2) as a standard way of measurement which is calculated by means of the following formula: $R^2/(1-R^2)$ in which R^2 equals to the squared multiple correlation. On this basis, the computed f^2

value of 0.02 is regarded as small effect size, the computed f^2 value of 0.15 is regarded as medium effect size, and the computed f^2 value higher than 0.35 is regarded as large effect size (Cohen, 1988). Effect sizes are presented in Table 21. As can be seen in the table, behavioral beliefs regarding recycling had a medium effect on attitude toward recycling (f^2=0.12), normative beliefs regarding recycling had a medium effect on subjective norms regarding recycling (f^2=0.13), and control beliefs regarding recycling had a medium effect on perceived behavioral control over recycling (f^2=0.17). Moreover, the TPB constructs and the additional constructs had an almost large effect on intention to recycle (f^2=0.24), and intention to recycle had a more substantial and an almost large effect size on current recycling behavior (f^2=0.33).

Table 4. 21

Effect Sizes

Path to	From	R^2	f^2
ATT	Bb	0.33	0.12
SN	Nb	0.34	0.13
PBC	Cb	0.38	0.17
INT	ATT	0.44	0.24
	SN		
	PBC		
	MOR		
	CON		
CUR	PBC	0.50	0.33
	MOR		
	CON		
	INT		

Note: ATT=Attitude toward behavior, Bb=Behavioral belief, SN=Subjective norm, Nb=Normative belief, PBC=Perceived behavioral control, Cb=Control belief, INT=Intention, MOR=Moral norm, CON=Convenience, CUR=Current recycling behavior.

LISREL provides researchers with an output including detailed information regarding indirect and total effects, in addition to the results related to direct effects highlighted above. Indirect effects are monitored when a latent variable is connected to one or more than one mediator variables without the existence of a direct straight line between those variables (Raykov & Marcoulides, 2006). On the other hand, total effect is calculated through the sum of both direct and indirect effects between the corresponding two latent variables. Based on this information, Jöreskog and Sörbom (1993) emphasized that one can infer that if there is not a direct effect among a set of variables, direct effects are regarded as equal to total effects. Table 4.22 indicates the indirect effects of independent latent variables on the dependent variables.

Table 4. 22

Indirect Effects of Independent Variables on Dependent Variables

Dependent Variables	Independent Variables				
	MOR	CON	Bb	Nb	Cb
ATT	-	-	-	-	-
SN	-	-	-	-	-
PBC	-	-	-	-	-
INT	-	-	0.01	0.00	0.01
CUR	-0.09	0.25	0.03	0.01	0.01

Note: ATT=Attitude toward behavior, SN=Subjective norm, PBC=Perceived behavioral control, INT=Intention, CUR=Current recycling behavior, MOR=Moral norm, CON=Convenience, Bb=Behavioral belief, Nb=Normative belief, Cb=Control belief.

According to Table 4.22, behavioral beliefs of preschool teachers regarding recycling were not only slightly but also indirectly related to their intention to recycle. In other words, the higher their beliefs about the consequences of recycling are, the more they tend to have an individual motivation to perform recycling behavior. In addition to that, results indicated that their control beliefs had a slight and indirect effect on their intention to recycle in that the higher their beliefs about the existence of facilitating factors for them to recycle, the more they have a tendency to adopt an individual

motivation to engage in recycling behavior. However, the results indicated that there is not an effect of normative beliefs of preschool teachers regarding recycling on their intention to recycle. In terms of the variables with an indirect effect on the recycling behavior of preschool teachers, Table 4.22 illustrated that the salient beliefs regarding recycling together with convenience to recycle and moral norm indirectly affected the recycling behavior of preschool teachers. To specify, there is a negative indirect effect of moral norms of preschool teachers regarding recycling on their recycling behavior in that their own beliefs and demand for exhibiting recycling behavior are not important enough for their recycling behavior. What's more, it can be inferred based on the results that the more convenient the preschool teachers are to recycle, the more they perform recycling behavior. Lastly, indirect effects of beliefs were found on the recycling behavior of preschool teachers. More specifically, the more they have beliefs about the consequences of recycling, about approval of significant other people on recycling, and about the existence of facilitating factors for their recycling behavior, the more they exhibit recycling behavior. Besides the indirect effects of independent variables on the dependent variables, the total effects of the aforementioned independent variables on the dependent variables are presented in Table 4.23.

Table 4. 23

Total Effects of Independent Variables on Dependent Variables

Dependent Variables	Independent Variables				
	MOR	CON	Bb	Nb	Cb
ATT	-	-	0.10	-	-
SN	-	-	-	0.03	-
PBC	-	-	-	-	0.04
INT	-0.04	0.12	0.01	0.01	0.03
CUR	-0.12	0.21	0.02	0.02	0.08

Note: ATT=Attitude toward behavior, SN=Subjective norm, PBC=Perceived behavioral control, INT=Intention, CUR=Current recycling behavior, MOR=Moral norm, CON=Convenience, Bb=Behavioral belief, Nb=Normative belief, Cb=Control belief.

As can be seen in Table 4.23, there was a total effect of behavioral belief of preschool teachers regarding recycling on their attitude toward recycling, a total effect of their normative belief regarding recycling on their subjective norms regarding recycling, and a total effect of control belief on their perceived behavioral control over recycling. In other words, the more have beliefs regarding the positive consequences of recycling, the more they adopt positive attitudes toward recycling. Similarly, the more they have beliefs about approval of significant other people on recycling, the more they adopt subjective norms regarding recycling. Moreover, the more they have beliefs about the existence of facilitating factors for their recycling behavior, the more they perceive a control over recycling as an applicable behavior. On the other hand, results indicated that there were total effects of moral norms of preschool teachers regarding recycling, convenience to recycle, behavioral beliefs, normative beliefs, and control beliefs regarding recycling on their intention to recycle. While there were positively total effects of the aforementioned independent variables on the intention to recycle, their moral norms had a negative effect on their intention to recycle. Similarly, except from moral norms of preschool teachers regarding recycling, their convenience to recycle, and behavioral, normative, and control beliefs had a positively total effect on their recycling behavior. In addition to the indirect and total effects of the independent variables on the dependent variables, the following Table 4.24 indicates the indirect effects among latent dependent variables.

Table 4. 24

Indirect Effects among Latent Dependent Variables

	ATT	SN	PBC	INT	CUR
ATT	-	-	-	-	-
SN	-	-	-	-	-
PBC	-	-	-	-	-
INT	-	-	-	-	-
CUR	0.15	0.12	0.75	-	-

Note: ATT=Attitude toward behavior, SN=Subjective norm, PBC=Perceived behavioral control, INT=Intention, CUR=Current recycling behavior.

According to Table 4.24, attitude of preschool teachers toward recycling had an indirect effect on their recycling behavior in that the more those teachers adopt high attitudes toward recycling, the more they exhibit recycling behavior. Moreover, there was found an indirect effect of subjective norms of the teachers regarding recycling on their recycling behavior, resulting in that the more significant others approve recycling behavior of the participants, the more they engage in recycling. Furthermore, among the all latent dependent variables, perceived behavioral control of preschool teachers over recycling had the most indirect effect on their recycling behavior. That is, the easier they perceive the performance of recycling behavior is, the more they exhibit recycling behavior in their daily life. Besides the indirect effects among the latent dependent variables, total effects among the latent dependent variables are provided in the following Table 4.25.

Table 4. 25

Total Effects among Latent Dependent Variables

	ATT	SN	PBC	INT	CUR
ATT	-	-	-	-	-
SN	-	-	-	-	-
PBC	-	-	-	-	-
INT	0.07	0.06	0.36	-	-
CUR	0.15	0.12	1.03	2.08	-

Note: ATT=Attitude toward behavior, SN=Subjective norm, PBC=Perceived behavioral control, INT=Intention, CUR=Current recycling behavior.

In consideration of the total effects among the latent dependent variables, Table 4.25 illustrated that there were found total effects among attitude of preschool teachers toward recycling, their subjective norms regarding recycling, their perceived behavioral control over recycling, their intention to recycle, and their current recycling behavior. In other words, when preschool teachers have high attitudes toward recycling, are approved of significant others regarding recycling, and perceive that they have a control over recycling, they have a higher individual motivation or

behavioral intention to recycle. Similarly, when they have positive attitudes toward recycling, are approved of significant others regarding recycling, perceive that they have a control over recycling, and have an individual motivation to recycle, they indicate more engagement in recycling behavior.

CHAPTER 5

DISCUSSION

This chapter aims to touch upon the crucial points of the current study into the following three sections, namely discussion of the key findings, implications of the current study with a specific focus on the theoretical implications, methodological contributions, and educational implications, and lastly limitations of the study in accordance with recommendations for further studies.

5.1 Discussion of the Key Findings

This section aspires to reflect on the results of this study in consideration of the proposed structural model based on the extended TPB framework, and the extant recycling literature. As a reminder, the present study intended to scrutinize the determinants of recycling intentions and behaviors of preschool teachers in Turkish context within the scope of the TPB. In this regard, in order to identify the motives lying behind the recycling intentions and behaviors of preschool teachers in Turkey, the current study aimed to examine the predictive power of the additional variables (moral norms regarding recycling, convenience to recycle, and past recycling behavior) together with the TPB components (attitude toward recycling, subjective norms regarding recycling, perceived behavioral control over recycling, intention to recycle, and recycling behavior). In this regard, the present results underpin that the extended version of the TPB tested in this study corroborated that the TPB provides a propitious framework for researchers to investigate the intentions of preschool teachers to recycle as well as their recycling behavior.

According to the findings of the current study, behavioral beliefs of preschool teachers regarding the consequences of recycling significantly predicted their attitudes toward recycling (β = .57) with an almost medium effect size (f^2 = .12). In other words, positive evaluations of preschool teachers about recycling are directly and positively dependent on their positive consequences of recycling. Moreover, their normative beliefs regarding approval or disapproval of significant other people in regard to recycling significantly determined their subjective norms (β = .58) with an almost medium affect size (f^2 = .13), as well. This means that the more they are approved by significant other people in regard to recycling, the more social pressure they perceive with respect to recycling. In a similar vein, their perceived behavioral control over recycling was directly predicted by their control beliefs regarding the existence of essential parameters for recycling (β = .62) with a medium effect size (f^2 = .17). That is, the more parameters are available for the teachers to recycle, the easier they perceive recycling to perform. Moreover, all belief constructs in the TPB had direct and indirect effects on recycling behaviors of the teachers. To specify, the teachers' behavioral beliefs regarding the consequences of recycling, normative beliefs about whether they were approved or disapproved by the significant others in regard to recycling, as well as their control beliefs about the parameters which made their recycling behavior easy or difficult to perform had both direct and indirect effects on recycling behaviors of the teachers. Indeed, their indirect effects revealed through their attitude toward recycling, subjective norms regarding recycling, and their perceived behavioral control over recycling, respectively. These current results were in line with the study of Cheung et al.'s (1999) study which was conducted to investigate the determinants of wastepaper recycling behavior of college students in Hong Kong. Their results indicated that behavioral beliefs, normative beliefs, and control beliefs of the students regarding recycling directly predicted their attitude toward behavior (β = .66), subjective norms (β = .59), and perceived behavioral control over recycling (β = .35), respectively. Although each TPB construct was significantly explained by its salient belief, the amount of relationship between them differed from the results of the

current study. To put it in a different way, the strongest relationship existed descendingly between behavioral belief and attitude, normative belief and subjective norms, and control beliefs and perceived behavioral control in the study conducted by Cheung et al. (1999), whereas the largest relationship existed descendingly between control beliefs and perceived behavioral control, normative belief and subjective norms, and behavioral belief and attitude in the present study. This means that both college students participated in Cheung et al.'s (1999) study and teachers participated in the current study revealed a similar level of relationship between their normative beliefs regarding approval of significant other people about recycling and the approval of significant other people about recycling. On the other hand, the sample in Hong Kong in China indicated the highest level of relationship between their positive evaluations about the consequences of waste paper recycling and attitude toward wastepaper recycling, while the Turkish sample indicated the largest level of relationship between their control beliefs regarding the existence of essential parameters for recycling and their perceived behavioral control over recycling. This difference might be explained by a number of factors such as social differences between both China and Turkey. According to Hoornweg and Bhada-Tata (2012), China was found to be the largest waste generator in the world in 2004 with an expectance of generating twice as much waste as the second highest contributor of global waste generation, the United States. In this regard, one can infer that Chineese people have had a more tendency than Turkish people to be subjected to the negative consequences of waste generation such as its impacts on the environment, society, and economy. For this reason, college students in Hong Kong in China might give the highest importance to outcomes of recycling behaviors such as its effects on the preservation of natural environment and its power to decrease acid rains and influences of greenhouse gases, as compared with the Turkish sample in the present study. Results of the current study were consistent with that of Tekkaya et al.'s (2011) study which was conducted with college students in order to investigate the factors lying behind the recycling behaviors of teacher candidates in Turkey, as well. In their study, it was

found that behavioral beliefs, normative beliefs, and control beliefs of the teacher candidates regarding recycling significantly predicted their attitude toward behavior (β = .56), subjective norms (β = .50), and perceived behavioral control over recycling (β = .42), respectively. Even though the results of their study found that each salient belief was directly and significantly related to its corresponding TPB construct, the level of relationships between them differed from the current findings. In fact, although the largest relationship existed between behavioral belief and attitude, normative belief and subjective norms, and control beliefs and perceived behavioral control in the study conducted by Tekkaya et al. (2011) respectively, the highest relationship existed between control beliefs and perceived behavioral control, normative belief and subjective norms, and behavioral belief and attitude in this study respectively. However, participants of the present study associated their salient beliefs with their corresponding TPB constructs than those of Tekkaya et al. (2011). This difference might be caused by possible factors such as the factors influencing their salient beliefs regarding recycling. According to Stern (2000), egoistic, altruistic, and biospheric values determine pro-environmental behaviors through several factors such as beliefs in regard to a certain behavior, norms, and intentions. Moreover, it was implied that behavioral beliefs of individuals are affected by values in that both altruistic and biospheric values are positively correlated with pro-environmental beliefs as well as behaviors, while egoistic values are negatively associated with them (De Groot & Steg, 2007; Stern & Dietz, 1994). In this respect, college students participated in Tekkaya and her colleagues' study might have strong altruistic and biospheric values affecting their normative beliefs in comparison with preschool teachers participated in the current study. Therefore, the relationship between normative beliefs and attitude might have a higher value. From a different perspective, Turkish preschool teachers participated in the present study might have a control belief about the fact that they had more opportunities facilitating their recycling behavior as compared with those of Tekkaya and her colleagues' study. Since the existence of recycling bins can increase recycling behaviors of individuals (Austin, Hatfield,

Grindle & Bailey, 1993), it can be inferred that participant preschool teachers might have facilitator factors such as the existence of recycling bins in their schools, resulting in having stronger control beliefs than those of college students in Tekkaya and her colleagues's study (2011).

Previous studies conducted on the subject of recycling have generally found that all major components of the TPB were successful in predicting intentions (e.g. Chan, 1998; Chen & Tung, 2010; Cheung et al., 1999; Oom Do Valle et al., 2005; Wan et al., 2012). Results of the current study confirmed that all original components of the TPB, namely attitude toward behavior, subjective norms, and perceived behavioral control, made statistically significant contributions to the explanations of recycling intentions of preschool teachers in Turkey. Furthermore, the TPB constructs and the additional constructs had an almost large effect size on current recycling behavior (f^2 = .24). In particular, results of the structural model revealed that the extended TPB model accounted for 44% of the variance of recycling intention, and 50% of the variance of recycling behavior. To specify, results of the path analysis indicated that perceived behavioral control was the primary predictor of recycling intentions of preschool teachers by explaining 30% of its variance, followed by statistically significant contributions of attitude toward behavior, subjective norms, and convenience, respectively. To put it differently, convenience to recycle was the weakest predictor of preschool teachers' intention to recycle with an explanation of 1% of its variance. Furthermore, moral norms were the only and solely construct which did not make a contribution neither directly nor indirectly to the teachers' intentions to recycle. In other words, moral norms of the teachers had neither direct not indirect effect on their recycling behaviors. However, intentions of the teachers to recycle were directly and positively determined by their attitudes toward recycling (β = .18), subjective norms about recycling (β = .16), perceived behavioral control over recycling (β = .55), and convenience to recycle (β = .12). What is more, while the teachers' behavioral beliefs regarding the consequences of recycling had merely an indirect

effect on their intentions to recycle by means of their attitudes toward recycling, their normative beliefs about whether they were approved or disapproved by the significant others in regard to recycling had a direct effect on their intention to recycle through their subjective norms regarding recycling. On the one hand, their control beliefs about the parameters which made their recycling behaviors easy or difficult to perform had both direct and indirect effects on their intention to recycle through the agency of their perceived behavioral control over recycling. On the other hand, intentions of the teachers to recycle made the strongest contribution to their recycling behavior through its predictive power of 40% of its variance with an almost large effect size ($f^2 = .33$), followed by the statistically significant contribution of perceived behavioral control to the recycling behaviors of the teachers. In fact, recycling behavior was directly and positively determined by perceived behavioral control ($\beta = .12$) and intention ($\beta = .63$). Moreover, there were two constructs, perceived behavioral control and convenience, which were directly and indirectly related to recycling behavior through the agency of intention. In other words, perceived behavioral control contributed to recycling behaviors of preschool teachers by explaining 1% of its variance. In this respect, moral norms regarding recycling as well as convenience to recycle were the constructs which did not contribute to the recycling behaviors of preschool teachers aside from a positive indirect effect of convenience on recycling behavior.

To place a specific focus on the determinants of preschool teachers' intention to recycle, the current study revealed that attitude made the second largest contribution to the explanation of their intention to recycle ($\beta = .18$, $t = 5.57$, $p = .000$). As a reminder, attitude toward recycling has been defined within the scope of this study as the preschool teachers' positive and negative evaluations of recycling, based on the definition of attitude toward a particular behavior provided by Fishbein and Ajzen (1975). In consideration of the definition and the results of the study, one can infer that the more positive and favorable attitudes preschool teachers adopt toward recycling, the more likely they intend to engage in recycling behavior, and vice versa. As a matter

of fact, preschool teachers reported positive attitudes toward recycling (M= 6.83). A great deal of teachers reported their attitude toward recycling as being as good (99%), necessary (99.2%), beneficial (99.2%), sensitive (97.7%), sanitary (96.6%), valuable (98.8%), right (99.3%), reasonable (99.3%), and worth to pay effort (99.4%). On the other hand, a few participant teachers reported that recycling was bad (.4%), insensitive (.5%), insanitary (1.2%), invaluable (.3%), wrong (.2%), and unreasonable (.2%). Moreover, no one expressed that recycling was unnecessary, unbeneficial, and not worth to pay effort.

A considerable amount of literature has been published on the predictive power of attitude toward recycling on the intentions to recycle within the scope of the TPB (Boldero, 1995; Botetzagias et al., 2015; Chaisamrej, 2006; Chan, 1998; Chen & Tung, 2010; Cheung et al., 1999; Chu & Chiu, 2003; Pakpour et al., 2014; Taylor & Todd, 1995; Tekkaya et al., 2011; Terry et al., 1999; Tonglet et al., 2004; Wan et al., 2012). In regard to the field of education, teachers' attitudes have been regarded as an important factor influencing their teaching practices in educational settings (Osborne, Simon, & Collins, 2003). On the subject of recycling, on the other hand, Tonglet et al. (2004) investigated the determinants of recycling behavior of households in Brixworth, the United Kingdom. They found attitude toward household recycling to be the major contributor of intentions of households to recycle (β = .51), and they suggested that British households intend to recycle if they are aware of the positive outcomes of household recycling. Tonglet et al. (2004) draw a further attention to the strong correlation of perceived behavioral control and situational factors regarding recycling. In other words, they found that the existence of skills, resources, and facilities made a significant contribution to the attitudes of the households toward recycling. In the field of education, Wan and his colleagues (2012) conducted a study to clarify the predictive factors lying behind recycling intentions and behaviors of university students and staff in a university campus in Hong Kong. Results of their study revealed that attitude toward campus recycling made the second highly

significant contribution to the explanation of their intentions to recycle (β = .19). This pointed that members of the university planned or intended to recycle depending upon their favorable evaluations of recycling. Consistent with the findings, Chaisamrej (2006) centered upon a specific type of recycling behaviors of college students in two culturally-distinct contexts, Thailand and the United States. The researcher drew a similar conclusion that attitude toward recycling slightly but significantly predicted the paper recycling behaviors of the students in the U.S. (β = .16), whereas it did not contribute to that of the students in Thailand. On the other hand, attitude toward behavior has recently been challenged by several studies demonstrating that it did not make a statistically significant contribution to the explanation of intentions to recycle (Philippsen, 2015; Xu et al., 2017). To illustrate, Philippsen (2015) investigated the determinants of university students' recycling intentions and behaviors in Netherland. She found that there was no statistically significant relationship between attitudes of the students toward recycling and their intention to recycle (β =.034). Since 114 students participated in her study including 45 items, a limited number of participants might be a possible cause of this problem when considering item numbers in her data collection tool. According to Field (2013), the more individuals participate in a survey study, the more likely constructs have a higher predictive power on another construct. Further, congruent with the study, Xu et al. (2017) investigated the predictors of household waste separation behaviors in Hangzhou, China. They found that attitude did not predict the participants' household waste separation intentions (β = -.086) because of the lack of items measuring the feelings of individuals about the corresponding behavior. Furthermore, another possible reason of the insignificant relationship between attitude toward waste separation on the waste separation intention might be caused by the fact that the mediator role of attitude toward recycling between moral norms and intentions. Indeed, there is a high relationship between moral norms about recycling and attitudes toward recycling (β = .81). Another reason for the insignificant path might be related to the fact that variables which will be covered in studies by utilizing the TPB ought to be parallel in terms of specificity, as

recommended by Ajzen and Fishbein (1980). In other words, using specific attitudes to explain a corresponding intention boosts its predictive power more than a general attitude can perform. In this respect, the present study provided unique evidences for the relevant literature in addition to lend a strong support to the predictive power of preschool teachers' attitudes toward recycling on their intentions to recycle by examining the motivators of recycling intentions of a different group of sample in a different context with a parallel specificity between attitude toward recycling and intention to recycle.

As another component of the TPB, subjective norms made the third highest contribution to the explanation of their intention to recycle ($\beta = .16$, $t = 5.07$, $p = .000$). Subjective norm has been defined for the current study as the social pressure perceived by the preschool teachers with respect to recycling, depending on the definition provided by Ajzen (1991). In this respect, it can be inferred that the more approval preschool teachers receive from the significant others, the more likely they intend to engage in recycling behavior, and vice versa. To specify, preschool teachers reported that they received approval from significant others ($M = 5.59$). A number of teachers expressed that opinions of people they valued supported those teachers to recycle (87.1%), and people who were important for the teachers expected them to recycle (73.4%). However, few teachers expressed that people they valued did not support them to recycle (5.1%), and people who were important for them did not expect them to recycle (13.7%).

In the literature on recycling, the relative importance of the subjective norms in predicting intention has been subject to considerable debate. Although several scholars lent significant support to the predictive power of subjective norms regarding recycling on intention to recycle in the previous TPB studies (Armitage & Conner, 2001; Chaisamrej, 2006; Chan, 1998; Chen & Tung, 2010; Chu & Chiu, 2003; Xu et al., 2017; Pakpour et al., 2014), predictive power of subjective norm was found to be

generally small. For instance, Chaisamrej (2006) found that subjective norms of college students regarding recycling predicted slightly but significantly to their intention to recycle in both the U.S. (β = .14) and Thailand (β = .18). Along with this result, Armitage and Conner (2001) found the predictive power of subjective norm on intention to be weak in their meta-analytic review upon the efficacy of the TPB. Furthermore, they emphasized that the underlying reason for why subjective norm was problematic in predicting behavioral intention in previous studies was resulted from the utilization of single-item measures which had low reliability values (Armitage & Conner, 2001). In addition, several other researchers did not find a significant relationship between subjective norms regarding recycling and intention to recycle (Boldero, 1995; Philippsen, 2015; Taylor & Todd, 1995; Terry et al., 1999; Tonglet et al., 2004). To illustrate, Philippsen (2015) used the multi-item scale recommended by Armitage and Conner (2001) and including six items in her study to examine the predictors of intentions of university students to recycle and their corresponding behaviors. However, subjective norms could not contribute to the explanation of the students' intention to recycle, as well (β = .08). For this reason, Philippsen (2015) implied that utilizing a multi-item scale did not bring about a different finding based on the predictive power of subjective norm on intention to recycle. Furthermore, she remarked that the insignificant relationship between these two constructs might be related to the fact that those students did not feel compelled to recycle due to the unfamiliarity of recycling behavior among those students. In addition, Boldero (1995) examined the household newspaper recycling intentions and behaviors of university students in the department of psychology in Australia. She found that subjective norms perceived by the students in relation to recycling did not have a significant correlation to their intention to recycle (β = .02). One of the reason for these insignificant findings might be related to the fact that the low contribution of subjective norms to behavioral intention might be resulted from the additional variables incorporated into these studies by using the TPB. That is, the possible contribution of subjective norms to the behavioral intention might be eliminated or assimilated by the additional variables

included in these studies. Results of the current study, on the other hand, revealed that subjective norms of preschool teachers regarding recycling made a relatively small but significant contribution to the explanation of their intention to recycle in Turkish context. Furthermore, this result may be resulted from the cultural variabilities in the contexts of Australia and Turkey such as individualism and collectivism adopted in these nations. Hofstede (1994) highlighted that individualism refers to the extent of the tendency of people in a society to act as individuals instead of acting as members of a group, whereas collectivism refers to the extent of the feeling of connectedness to a group, resulting in a personal thought of ''we'' rather than ''I''. According to Nelson and Shavitt (2002), industrialized countries such as the United States and Australia are considered as individualistic, whereas developing countries such as China and Turkey (Oishi, Diener, Suh & Lucas, 1999) are collectivistic societies. Bontempo and Rivera (1992) put a special emphasis on the fact that collectivist societies give more importance to norms rather than attitudes, whereas individualist societies focus more on attitudes toward a social behavior rather than norms. For example, a cross-cultural research conducted in the United States, Australia, England, Canada, Holland, Ireland, Israel, Spain, and Mexico by Bontempo and Rivera (1992) found that attitudes are given priority rather than norms based on the extent of individualism adopted in the culture. For this reason, Boldero's study (1995) in which Australian university students participated, and the current study conducted with Turkish preschool teachers might differ from each other in terms of the predictive power of subjective norms in their recycling intentions. According to Terry et al. (1999), subjective norms were contingent upon whether individuals thought themselves as a part of a community or not. On this basis, the participant teachers might take into consideration the approval of the people in their surroundings to plan or intend to recycle, because they might consider themselves as a member of a particular group such as school community with their colleagues or school administrators. Another reason might be related to the close relationship between subjective norms and the society in which individuals live in that these widely-diverse findings might be caused by the different cultural settings and value systems of individuals in those contexts (Davies et al., 2002). Additionally, it was

asserted that subjective norms were not significant determinants in more mature systems, therefore, they believed that social constraints might be significant for individuals in early stages of a behavior (Hage et al., 2008; Taylor and Todd, 1995). In this respect, Hage et al., (2008) exemplify that people in countries like Sweden in which waste separation has been performed for a long time have not a tendency to be impressed by their significant others such as family.

Perceived behavioral control as another critical component of the TPB was found to be the strongest predictor of intentions of preschool teachers to recycle (β = .55, t = 17.25, p =.000). Within the scope of this study, perceived behavioral control has been defined as the ease or difficulty of recycling behavior perceived by the preschool teachers, as proposed by Ajzen (1991). To this respect, it can be inferred that the more an individual believes s/he can perform a behavior in consideration of the availability of resources and facilities which encourage them to perform the specific behavior, the more they intend to engage in the corresponding behavior, and vice versa. In the current study, preschool teachers perceived recycling as an easy behavior to engage in (M= 5.84). More specifically, vast majority of the teachers expressed that it was easy for them to recycle the recyclable materials (paper, glass, plastic etc.) regularly in the upcoming months (92.8%), it was under their control to recycle the recyclable materials (paper, glass, plastic etc.) regularly in the upcoming months (95%), and environmental factors cannot prevent them from recycling the recyclables materials (paper, glass, plastic etc.) regularly in the upcoming months (80.4%). On the other hand, although there was not any participant who reported that it was hard for them to recycle the recyclable materials (paper, glass, plastic etc.) regularly in the upcoming months, there few teachers who expressed that they were undecided whether or not it was under their control to recycle the recyclable materials (paper, glass, plastic etc.) regularly in the upcoming months (5%), and environmental factors can prevent them from recycling the recyclables materials (paper, glass, plastic etc.) regularly in the upcoming months (1.4%).

The role of perceived behavioral control in predicting a particular behavior has been a controversial and much disputed subject within the TPB literature. To specify, the extant literature which has emerged on the predictive power of perceived behavioral control on behavioral intention offers contradictory findings about whether it was a significant determinant of intention to recycle (Armitage & Conner, 2001; Botetzagias et al., 2015; Chaisamrej, 2006; Chan & Bishop, 2013; Cheung et al., 1999; Chu & Chiu, 2003; Pakpour et al., 2014; Taylor & Todd, 1995; Tekkaya et al., 2011; Terry et al., 1999; Oom Do Valle et al., 2005; Wan et al., 2012) or it did not contribute to the explanation of intention to recycle (Boldero, 1995; Chen & Tung, 2010; Philippsen, 2015; Tonglet et al., 2004; Xu et al., 2017). For example, the findings of the current study were consistent with those of Taylor and Todd (1995) who found that household recycling behavior of individuals in Canada was significantly determined by perceived behavioral control of the residents over recycling (β = .18). Indeed, these researchers highlighted a limitation of their study that the area in which their study was conducted was not only a well-entrenched recycling area where rate of participation in recycling was higher than the national standards (Taylor & Todd, 1995). Hence, this limitation might give rise to include individuals who intended to participate in recycling behavior in their study, resulting in a significantly higher predictive power of perceived behavioral control on intention to behavior. In order to abstain from a biased sample and to enhance the representativeness of the sample to the population, the participant preschool teachers participated in the current study were conveniently selected from nine districts of the capital city of Turkey, Ankara. These findings further were supported by the findings of Chu and Chiu's (2003) study in which the factors lying behind household waste recycling behaviors of residents were examined in Kaohsiung in Taiwan. These researchers found that perceived behavioral control was the most significant predictor of intention to household waste recycling. One of the possible reasons contributing to the finding might be the fact that the researchers separated control beliefs predicting perceived behavioral control

over behavior into two subsections, including self-efficacy referring to perceived knowledge of recycling and effectiveness of recycling, and facilitating conditions referring to the components such as time and convenience of opportunities for recycling behavior (Chu & Chiu, 2003). This division of perceived behavioral control household recycling might foster its predictive ability on the corresponding intention to recycle. In contrast to the findings of those studies, on the other hand, no evidence of the predictive power of perceived behavioral control on intention was detected by Chan and Tung (2010). In their study they investigated the determinants of Taiwanese consumers' recycling behavior. As a result, they found that except from perceived behavioral control, other variables such as consequences of recycling, attitude, subjective norms, and moral norms significantly and respectively contributed to the explanation of intention of the participant consumers to recycle (Chan & Tung, 2010). According to Ajzen (1991), predictive ability of attitude toward behavior, subjective norm, and perceived behavioral control on behavioral intention may diversify by the type of behaviors and situations in which the study is conducted. In other words, if attitude toward a certain behavior and subjective norms regarding this behavior are strong predictors of intention to engage in this behavior, perceived behavioral control may contribute less to the explanation of the intention to perform the corresponding behavior. Considering Chan and Tung's (2010) study, higher predictive power of attitude of consumers toward recycling and their perceived subjective norms regarding recycling might decrease the predictive ability of their perceived behavioral control over recycling. Although Chu and Chiu (2003) and Chan and Tung (2010) conducted their studies within the boundaries of the same country, their sample characteristics might be the cause of the contradicting results of their studies. Furthermore, since Chan and Tung (2010) did not refer to role of the control beliefs which are the antecedent cognitive basis of perceived behavioral control in their study, the lack of items regarding control beliefs in their study might interrupt perceived behavioral control of the consumers over recycling to predict their corresponding intention. Besides, Philippsen (2015) found that neither of the TPB constructs

including perceived behavioral control significantly predicted the determinants of university students' recycling intentions on a campus in Netherland. One possible reason behind this finding might be the fact that perspectives of the participants might vary across the availability of recycling opportunities provided for them to recycle, demonstrating an inadequate measurement of their perceived behavioral control over campus recycling.

According to Ajzen (1991), perceived behavioral control might directly influence actual behavior. For this reason, several other studies examined the predictive power of perceived behavioral control over recycling on recycling behavior (Boldero, 1995; Chan & Bishop, 2013; Chen & Tung, 2010; Davies et al., 2002; Terry et al., 1999). Chan and Bishop (2013) tested three proposed models including moral norm with different paths and investigated the predictors of recycling behaviors of university students in Australia. They found a consistent result with those of the current study that their perceived behavioral control significantly predicted their recycling behavior (β = .27). Herein, results of the current study was in line with the results of Chan and Bishop's (2013) study in that both studies reported that perceived behavioral control was found to be a statistically significant determinant of currect recycling behavior. On the other hand, Boldero (1995) investigated university students' household newspaper recycling intentions and behaviors in Australia. She found that their perceived behavioral control over recycling did not explain their recycling behavior. Since there were a number of additional variables such as storage space, past behavior, evaluation of council, inconvenience, benefits of recycling, and lack of conviction in their study, this might affect the predictive power of perceived behavioral control on recycling behaviors. In other words, the number of additional variables in the current study might lead perceived behavioral control to be a significant predictor of current recycling behavior. In consistent with this result, Chen and Tung (2010) investigated the factors influencing Taiwanese consumers' recycling behavior and found that their perceived behavioral control over recycling did not appear to be a significant predictor

of their recycling behaviors. Since there existed several additional variables such as moral norms, situational factors, past recycling behavior, and consequences of recycling integrated into their study emerged to provide a higher explanation of recycling behavior, perceived behavioral control might not have enough predictive power for explaining recycling behavior. In a parallel way, the differences in the results of Chen and Tung's (2010) study and the present study regarding the existence of the predictive power of perceived behavioral control on the current behavior might be caused by the different sample groups included in both studies. That is, since preschool teachers included in the current study as a sample group might have a higher perceived behavioral control over recycling, resulting in its significant contribution to the explanation of variance in the current behavior.

In addition to the TPB components, moral norms were one of the additional variables integrated into the present study. In the current study, moral norms were not found to be a statistically significant determinant of intentions of preschool teachers to recycle (β = -.04, t = -1.29, p =.246). It has been defined by Poskus (2015) as one's own beliefs and demands for exhibiting a specific behavior. Based on the definition, one can infer that the more individuals feel an individual responsibility to perform a behavior, the more they tend to engage in the corresponding behavior. For this reason, the current findings may indicate that the participant preschool teachers did not feel an individual responsibility to intend or plan to engage in recycling behavior, although the descriptive results of the current study about the moral norms perceived by the participant teachers, they had a fairly higher score than the mid-point (M = 6.40). To specify, they expressed that they believe in the necessity of not wasting something which can be reused (98.3%), not recycling their wastes is wrong for them (93.6%), they feel guilty unless they do not recycle their wastes (90.8%), not recycling contradicts with their principles (85.1%), and everyone should share the responsibility for recycling waste (98%). Whereas none of the teachers reported that they do not believe in the necessity of not wasting something which can be reused, there were

teachers who reported that not recycling their wastes is not wrong for them (.9%), they do not feel guilty unless they do not recycle their wastes (.2%), not recycling does not contradict with their principles (4.4%), and everyone should not share the responsibility for recycling waste (.2%).

Relevant literature on the role of moral norms in forecasting intentions to recycle has emerged evidences about its predictive ability on the intention to engage in the corresponding intention. To put it explicitly, results of the current study was inconsistent with some published studies (Botetzagias et al., 2015; Chan & Bishop, 2013; Chen & Tung, 2010; Chu & Chiu, 2003; Oom Do Valle et al., 2005; Pakpour et al., 2014; Philippsen, 2015; Poskus, 2015; Wan et al., 2012). To illustrate, Chan and Bishop (2013) formed three proposed models into which moral norm was integrated in different ways in their study in which they investigated the determinants of recycling behaviors of university students in Australia. In the model which indicated the most fit to the data set they completely replaced moral norms with attitude toward behavior. Results of the study revealed that moral norms significantly predicted intention of those students to recycle (β = .33). For this reason, they suggested that substitutability of attitude toward recycling with moral norms about recycling as a predictor of intention to recycle. The reasons for why the results of current study and that of Chan and Bishop (2013) differ in terms of the predictive ability of moral norms on intention might be resulted from several factors. Firstly, the way of integrating moral norms into both studies might affect the results, demonstrating different path coefficients. To specify, moral norms were integrated into the current study with the TPB variables (attitude, subjective norm, perceived behavioral control) and the additional variable (convenience), whereas Chan and Bishop (2013) integrated moral norms into their study by completely discarding attitude from their study and replacing moral norms with attitude. Secondly, since moral norms have been regarded as internalization of social norms (e.g. Thøgersen, 2009), the lack of knowledge about the native land of the participant students might have an important impact on the reliability of their

findings based on moral norms. Thirdly, their sample group which was young adults ought to be considered while interpreting the results. Preschool teachers in Turkish context might not give that much importance to their moral norms in intending to recycle as compared with the young university students in Australian context. Poskus (2015) was another researcher who included moral norms in his study in which recycling behaviors of university students in Lithuania were investigated. In this respect, he examined different models to integrate moral norms such by replacing moral norms with attitude, including moral norms as a direct predictor of intention and behavior, including moral norms as an indirect predictor of behavior through intention, or associating moral norms with other TPB variables to directly predict intention and behavior. The proposed model with the best fit to the data set indicated that when moral norms were replaced with attitude because of the lack of convergent validity, it predicted both intention (β = .49) and behavior in related to recycling directly. To put it in a different way, other proposed models failed to contribute to the explanation of intention to recycle, and one of the proposed models in which moral norms were integrated as a direct predictor of intention and behavior in addition to the TPB constructs indicated similar results with the current study in which moral norms did not improve the predictive power of intention to recycle and the corresponding behavior. Based on the results, Poskus (2015) emphasized that moral norms can be strong predictor of both recycling intention and behavior. One of the possible reasons for the differences in findings of Poskus's (2015) study and the present study might be caused by a couple of reasons. At first, Poskus (2015) did not integrate any other variable into his study owing to reaching a specific purpose of determining the most appropriate model based on the data obtained from university students in contrast to the current study. Moreover, the characteristics of sample, cultural issues and value systems, gender of the participants might bring about a distinction between the findings of both studies. At this point, Botetzagias et al. (2015) tested three proposed models based on a data set obtained from Greek citizens in order to investigate the factors influencing their recycling behavior by integrating moral norms into their

study. In pursuit of the aim, components of the TPB (attitude, subjective norm, perceived behavioral control) were utilized as direct predictors of intention in the first model, moral norms were completely replaced with attitude and integrated into the second model as a predictor variable of intention, whereas moral norms were integrated into the third model as an indirect predictor of intention through attitude as well as a direct predictor of behavior. In their study they found that moral norms about recycling predicted intention to recycle indirectly through attitude (β = .14) and behavior directly. Although perceived behavioral control was found to be the strongest predictor of intention in this study (β = .60) similar to the current study (β = .55), results of the two studies revealed different findings in terms of the integration of moral norms into the models. Differences in the results might be resulted from several reasons. For example, there was another additional variable in the current study, and this variable might absorb a possible predictive power of moral norms on intention to recycle. What's more, when integrating socio-demographic information into the extended theory, Botetzagias et al., (2015) found that both age (β = .25) and gender (β = .25) directly and significantly affected moral norms in the model. On this basis, 39.6% of the participants were male, and 59.4% of the participants were female in their study, while almost all of the participants were female in the current study (99.7%). In addition, although there were participants who were younger than 20 years old (2.4%), between the ages of 20 and 35 (63.1%), between the ages of 36 and 50 (28%), and older than 50 years old (4.1%) in their study, 44.9% of the participants in the current study were between the ages of 20 and 34, half of the participants were between the ages of 35 and 49, and 4.2% of them were older than 50 years old. In consideration of the differences in the sample characteristics of both studies, one can infer that the significant paths between these socio-demographic variables and moral norms in Botetziagas et al.'s (2015) study and the explicit differences in these variables in both studies might give rise to obtain different results from these studies.

Another additional component integrated into the current study was convenience to recycle. In this study, convenience was found to be a statistically significant determinant of intention of preschool teachers to recycle (β = .12, t = 4.06, p =.000). Based on the definition regarding convenience of Ajzen (1991) which referred to the extent to be convenient for engaging in a behavior, it has been defined in the current study as the preschool teachers' belief about how much convenient it is for them to recycle. In this line, it can be concluded that the more convenient factors which catalyze the participation of individuals in recycling behavior are, the more they intend to exhibit the corresponding behavior. On this basis, the current findings demonstrated that the participant preschool teachers considered that recycling was convenient for them to engage in. Descriptive results about convenience supported the result in that they had relatively higher scores (M= 6.50). More specifically, the participant teachers expressed that they do not believe that recycling is time-consuming (95.5%), recycling is not practical (94.6%), and recycling is hard to engage in (96.4%). In other words, none of them reported that they believe that recycling is time-consuming, not practical, or hard to engage in.

Literature in which recycling behavior was investigated within the scope of the TPB has attempted to incorporate convenience as an additional variable in order to obtain an extend model. Although some of the research includes convenience under the name of convenience or inconvenience as an additional variable (e.g. Gadiraju, 2016; Wan et al., 2012), others extended their models by integrating convenience under the general title of situational factors (e.g. Boldero, 1995; Tonglet et al., 2004). Independent of how convenience was called in studies, the findings of the present study supported previous research in which convenience significantly contributed to the explanation of intention to recycle (Boldero, 1995; Philippsen, 2015; Tonglet et al., 2004; Wan et al., 2012), whereas current results indicated a contradiction with some of earlier findings (Gadiraju, 2016;). In a study conducted to investigate the determinants of campus recycling behaviors of students and staff in Hong Kong, Wan

et al. (2012) found that convenience was one of the significant predictors of their intention to recycle (β = .17), later than the TPB constructs. In a similar manner, convenience has been found to be the fourth strongest predictor of intention of preschool teachers to recycle, later than the TPB constructs. In 1995, Boldero investigated the factors influencing newspaper recycling behavior of recyclers and non-recyclers in Australia by considering the TPB constructs and situational factors regarding recycling. Results of her study revealed that inconvenience among situational factors significantly but negatively contributed to the explanation of intentions of the respondents to recycle newspaper. Although the sample characteristics were different from those of the present study, the result of the present study about the role of convenience to recycle were in line with that of the current study. Furthermore, in a study conducted by Tonglet et al. (2004) in order to investigate the factors affecting recycling behaviors of residents in U.K. by integrating several additional variables such as situational factors, consequences of recycling, and moral norms arrived at a similar conclusion that situational factors were significant predictors of their intention to recycle (β = .30). Moreover, Philippsen (2015) examined the determinants of recycling behaviors of university students and found that inconvenience (β = .20) significantly but negatively predicted intentions of the students to recycle. Based on the finding, she suggested that recycling be as convenient as possible for students by providing them with wealthy opportunities to recycle such as the existence of recycling bins within campus. In this respect, Philippsen's (2015) study and the current study had common points in relation to the importance of convenience in intending to exhibit recycling behavior. On the other hand, Gadiraju (2016) conducted a study in order to examine the factors lying behind campus recycling behaviors of students in the U.S. She found that there was a negative but not significant relationship between inconvenience and intention with regard to recycling, therefore, it did not contribute to the explanation of their intention to recycle. The difference in the results of Gadiraju's (2015) study and the present study might be resulted from using different samples and conducting the research in different cultural

settings. To this respect, Derksen and Gartrell (1993) implied that individuals who adopted positive attitudes toward recycling had a more tendency to recycle depending on the convenience of facilities. In fact, making recycling ‘‘easy and convenient’’ for individuals who were not concerned about the environment might engage more in recycling for the researchers. In other words, perceived behavioral control which is related to the extent of easiness or difficulty to engage in recycling behavior and convenience to recycle could encourage some a group of individuals to exhibit the corresponding behavior. In this regard, one of the possible reasons for why Gadiraju's (2016) study and the present study found different results based on the variable might be related to the predictive power of perceived behavioral control on intention to recycle in the current study (β = .55), and lack of predictive ability of perceived behavioral control in the former study (β = -.011). In addition to the relationship between convenience and intention, the current study investigated the predictive power of convenience to recycle on recycling behavior. However, convenience to recycle did not emerge to be a significant predictor of recycling behavior of preschool teachers. In fact, it only made an indirect contribution to their recycling behavior through intention to recycle. This means that the participant preschool teachers did not establish a strong relationship between the convenience level of the factors encouraging them to recycle and the performance of recycling. One of the possible explanations of this result might be the fact that there was a high relationship between their intention and current behavior, and a slightly large relationship between their perceived behavioral control and current behavior. These two variables might absorb the predictive power of convenience on the current behavior for the current study.

Past recycling behavior, which has been defined as the frequency of an individual's previous participation in a specific behavior (Hagger, 2017), was another additional variable integrated into the current study in order to examine its possible predictive role in explaining intentions of preschool teachers to recycle and their corresponding behaviors. Although it was planned to be included in the structural model to test how

predictive it would be while recycling intentions and behaviors were regarded, past recycling variable violated the discriminant validity which endangers the accuracy of a structural model (Farrell, 2010) due to its high correlation with intention to recycle (β=.80), and recycling behavior (β=.99). On this basis, it was discarded from the present study not to overshadow the preciseness of the findings obtained from the structural model. To date, a considerable number of researchers argued not only the role of past behavior in determining recycling intention and behavior but also the ways of measuring it. For its role in explaining intention and behavior, there has been a consensus on the fact that it had an influence on both intention and behavior (Bagozzi, 1991; Bentler, 1979; Boldero, 1995; Fredricks & Dossett, 1983; Pakpour et al., 2014; Terry et al., 1999; Verplanken et al., 1997; Xu et al., 2017). More specifically, Terry et al. (1999) investigated the household recycling behaviors of residents in Australia and found that past behavior moderated the relationship between attitude and intention (β = .33) and predicted behavior as well (β = .54). In their study they assessed past recycling behavior by using a single item which was related to how much they recycled their household waste that can be recycled during the past three months (i.e. newspaper and glass, aluminum/tin products and certain plastic products) at Time 1. In order for the participants to respond the item they offered rates by numbers (1 = none at all to 7 = everything). After that, for Time 2 they used a five-item self-report to learn how much of their recyclable waste which they had thrown out for recycling during the past fortnight by expressing newspaper, glass, aluminum/tin products and certain plastic products in a separate way. Although the items used in the Time 1 were the same with those utilized in the current study, there were not items regarding the frequency of past recycling behavior during the past fortnight for each waste material in the current study. The lack of such a short term measurement tool for assessing past behavior of the participant preschool teachers might bring about the existence of a high correlation with intention and behavior in the present study which included a time interval of last year. According to Sutton (1994), the amount of relationship between two constructs can be affected by several factors such as ‘‘length of time interval, the time reference

and resemblance of the corresponding constructs, and sample characteristics''. To elaborate, although self-reports have been considered as a way of learning individuals' self-perception on their behavior (Olson, 1981), their intentions to perform a behavior (Lee, 1993), their beliefs as well as attitudes (Rathje, 1989) instead of learning their objective behaviors. At this point, episodic memory in which previous activities of individuals are stored gives rise to problems about providing an accurate response for items (Tversky & Kahneman, 1974; Verplanken & Aarts, 2011). For these reasons, the participant preschool teachers in the current study might have problems about remembering their past behaviors within the last year, leading them to focus on their current behavior. In another study conducted by Pakpour et al. (2014) in order to investigate the determinants of household waste recycling behavior in Iran found that their past recycling behavior significantly predicted their current recycling behavior (β = .14). In this study, on the other hand, single item was utilized to assess past recycling behaviors of the respondents with a 5-point Likert scale ranging from 1 (never) to 5 (always). Since a 5-point Likert scale is preferred to foster response rate (Babakus & Mangold, 1992), and it provides researchers with a more limited and poorer subjective information as compared to a 7-point Likert scale (Finstad, 2010). For this reason, these criteria might have an impact on the results of Pakpour et al.'s (2014) study. Align with their study, Xu et al., (2017) examined the determinants of household waste separation behaviors in Hangzhou, China. They found that past behavior was the strongest predictor of intention to recycle (β = .57), and directly and significantly predicted recycling behaviors (β = .14). In their study, they utilized a 5-point Likert scale for assessing past recycling behavior scale including two items like whether or not they regularly engage in waste separation behavior and provided options for the respondents ranging from 1 = not at all to 5 = always. The current study differed from their study in terms of the type of measurement tool they utilized and the length of time interval for past recycling behavior. As aforementioned, using a narrow time interval for the respondents to recall their past recycling behavior to rate might have influence their findings.

Moreover, intentions of preschool teachers to recycle emerged to be a significant predictor of their recycling behavior ($\beta = 63$, $t = 16.82$, $p = .000$). Intention has been defined by Ajzen (1991) as an individual motivation to engage or not to engage in a behavior. Based on the definition, the more individual motivation individuals have in order to perform recycling behavior, the more they engage in the corresponding behavior. According to the descriptive results of their intention to recycle, they indicated a high level of intention in related to recycling (M= 5.52). More specifically, the participant teachers expressed that they will try to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months (83.4%), and they plan to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months (75.5%). However, there existed few participant teachers reported that they will not try to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months (3.9%), and they do not plan to recycle the recyclable materials (paper, glass, plastic, etc.) regularly in the upcoming months (7.5%).

There existed a considerable number of research indicating the significant predictive power of recycling intention on recycling behavior (Chan, 1998; Chan & Bishop, 2013; Cheung et al., 1999; Chu & Chiu, 2003; Terry et al., 1999; Wan et al., 2015). For instance, Chan (1998) investigated household recycling behaviors of residents in Hong Kong and found that their behavioral intention to recycle explained 14% of the variance of their recycling behaviors. However, in the current study intentions of preschool teachers explained 40% of variance of their recycling behaviors. In other words, by contrast with the participants who participated in Chan's (1998) study, preschool teachers reported that they had more intentions to engage in recycling activity. Differences in the results of both studies might be related to the participant groups as well as the cultures where the corresponding data were collectred. To specify, Chan (1998) studied with household members, whereas teachers were the source of data in the current study. Since teachers are a part of the field of education, they may have more positive intentions to engage in recycling behavior as compared

with household members. Moreover, in their study, Chan and Bishop (2013) investigated the factors influencing recycling behaviors of university students in Australia. They found that their perceived behavioral control over recycling, and intention to recycle explained 41% of the variance of their recycling behaviors. As compared with the results of the current study in which 40% variance of recycling behaviors of preschool teachers were explained by their intention, it can be inferred that two studies showed some similarities in terms of the explained variance of recycling intention. This similarity might be resulted from the sample groups utilized in both studies. To specify, Chan and Bishop (2013) studied with a sample group who was composed of a university community including mostly young adults. In a similar vein, in the current study, nearly half of the participants were in the ages between 20 and 34 (44.9%). Similar ages of the participants may have an impact on the similar results in regard to the explanation of the variance of recycling intention. Likewise, Cheung et al. (1999) examined the predictors of wastepaper recycling behaviors of college students in Hong Kong and found that their intention to recycle predicted 20.1% of the variance of their recycling behaviors. These studies confirmed that intention to recycle was a significant determinant of participants' recycling behaviors. Results of Cheung et al.'s study differed from the current study in terms of the explained variance of recycling behavior by recycling intention (40%). On this basis, it can be inferred that the college students who participated in their study in Hong Kong had a lower intention to engage in recycling, whereas the participant preschool teachers in the current study adopted more positive intention to perform recycling behavior. This finding might be resulted from the fact that they might regard recycling activity as an easy behavior to perform or they might not have necessary necessary opportunities to engage in recycling behavior.

5.2. Implications of the Study

In the following part, the present study provided critical implications such as theoretical implications, methodological contributions, and educational implications for future research.

5.2.1. Theoretical Implications

This study was an effort to investigate the determinants of preschool teachers' intentions and behaviors about recycling. Results of the study revealed that behavioral, normative, and control beliefs of preschool teachers were significant determinants of the corresponding constructs, namely attitude, subjective norm, and perceived behavioral control. In addition, according to the findings, intentions of the preschool teachers were determined by their attitude toward recycling, subjective norms regarding recycling they perceived, their perceived behavioral control over recycling, and convenience to recycle. In other words, if preschool teachers hold positive attitudes toward recycling, they are encouraged by the significant others that they have an intimate relationship, they perceive recycling as a behavior easy to perform, and they are provided resources and facilities for making recycling convenient for them, they will be more likely to engage in recycling behavior. On the other hand, moral norms regarding recycling they perceived did not predict their intention to recycle. That is, tendency of preschool teachers to exhibit recycling behavior is independent of their feeling about the individual responsibility to recycle. Moreover, unexpectedly, their past recycling behaviors were highly related with their recycling intention and behavior, demonstrating that their previous recycling experiences during the last year were almost same with their current recycling behavior. Furthermore, current findings indicated that recycling behaviors of the participant preschool teachers were directly predicted by their intention to recycle, and their perceived behavioral control over recycling. This means that if preschool teachers feel an individual motivation to

recycle, and they consider that recycling can be easily performed, they engage in recycling behavior more.

According to Kelloway (1998), if a path model or structural equation model including an insignificant path or paths, the model ought to be modified by adding different paths from the existing paths or removing the insignificant paths from the tested model. Since the proposed model at the beginning of the study was aimed to test in the current study, this study did not attempt to modify the proposed model by neither adding new paths among the corresponding variables nor removing an insignificant path from the study. However, in order to modify the proposed model in a way that it would have the best fit to the data set, moral norms may be replaced with attitude toward behavior, as Chan and Bishop (2013) and Poskus (2015) proposed in their study. Moreover, an indirect path between moral norms and intention may be generated through attitude, as proposed by Botetzagias et al. (2015).

Furthermore, the structural model indicated that the strongest predictor of the intentions of preschool teachers was perceived behavioral control. According to Derksen and Gartrell (1993), providing opportunities leaded non-recyclers who did not have much environmental concern to regard recycling behavior as an easy and convenient behavior to perform, resulting in a higher rates of engagement in recycling behavior. In other words, even people who do not think about the sake of the environment can engage in recycling behavior, if they were supported by the existence of opportunities in their daily life. Based on the notion, it is an urgent need to promote preschool teachers' control over recycling by providing resources, facilities, and opportunities. In this regard, recycling bins can be located in the educational settings such as classrooms and schools for the teachers to think recycling as an easy behavior to engage in. Providing these opportunities for them is crucial for leading them not only to increase their motivation to recycle but also their participation in recycling behavior. The current results indicated that attitudes of preschool teachers toward

recycling were the second highest determinant of their recycling intention. For this reason, it is vital to guide preschool teachers to develop positive and favorable attitudes toward recycling. In this respect, in-service trainings and workshops may be provided for them to have a better understanding of the advantages of recycling for individuals, other living beings, nature, and the resources. Subjective norms were the third strongest predictor of their intention to recycle. According to Oskamp et al. (1991), if an individuals' friends and neighbors engage in recycling activity, those individuals are likely to perform recycling behavior. On this basis, organizing trainings for the teachers, and training the community may be an effective strategy to understand normative structures perceived by the community and enhance their perception of norms in relation to recycling. What's more, since convenience was the fourth strongest predictor of their recycling intention, motivations of the teachers to recycle may be strengthen by making recycling as convenience for them as possible. In this way, both their motivation to recycle and their recycling behaviors can be promoted. As proposed by Derksen and Gartrell (1993), recycling can be made a convenient behavior to perform by authorities, such as municipalities. It can be inferred that if teachers have an opportunity to sort their wastes thanks to the existence of recycling bins in their schools, they will probably more engage in recycling behavior.

To sum up, the structural model of the proposed model increased the predictive ability of the final model by extending the TPB by adding another important variable, convenience to recycle. That is, the present study lends strong support to incorporate convenience into the TPB with regard to recycling context, as proposed by other researchers (e.g. Gadiraju, 2016; Wan et al., 2012).

5.2.2. Methodological Contributions

In the current study several measurements were adapted for a different sample group, preschool teachers in Turkey in consideration of the Turkish culture and context. Subsequent analyses confirmed that the ‘‘Recycling Behavior Scale for Preschool

Teachers'' was a reliable and valid measurement tool for explaining the determinants of preschool teachers in Turkey. Furthermore, the scale had a satisfactory fit indices during the path analyses procedure.

In order to investigate recycling intentions and behaviors of preschool teachers this study utilized path analysis within SEM which provides a comprehensive approach to test models including both causal and correlational relationships among observed variables and latent variables (Hoyle, 1995), and estimations of firsthand and secondhand impacts of variables. On this basis, covariance-based structural equation modelling (CB-SEM) was preferred for this study, since it promotes the compatibility of the proposed covariance matrix and the sample covariance matrix to confirm the proposed model (Gefen, Straub & Boudreau, 2000), and testing the fitness of a model to a corresponding data set (Astachan, Patel & Wanzenried, 2014). Another reason for why CB-SEM was preferred for the current study was related to drawbacks of partial least square structural equation modeling (PLS-SEM). To specify, when the latter is utilized, measurement errors indicate more chance correlations within themselves in PLS models, leading to biased and inefficient estimates (e.g. Goodhue et al., 2013). In fact, Evermann and Tate (2013) highlighted that factor loadings are quite biased in PLS analyses. Furthermore, PLS-SEM does not provide researchers with neither tests nor indices to reveal to the strength of a model in terms of reflecting a set of observed data (Rönkkö, McIntosh & Antonakis, 2015). In consideration of the limitations of PLS-SEM, CB-SEM was used in the current study in accordance with LISREL 8.8 software package program which has been regarded as the most widely-used software in structural equation modeling by researchers (Bryne, 1998).

5.2.3. Educational Implications

One of the most important strength of the present study is undoubtedly related to the influence of preschool teachers on young children's lives. According to Chapter 36 of the Agenda 21, sustainable behaviors can be adopted through education which equips

individuals, especially young children, with environmentally sound beliefs, attitudes, and behaviors (Gadotti, 2009). According to Basile (2000), early childhood education period is the time when young children begin recognizing and adopting positive attitudes toward the natural environment. Moreover, a number of researchers put a specific emphasis on the fact that if children do not hold positive attitudes toward the environment, it is difficult for them to adopt that in their later life (e.g. Basile, 2000; Siraj- Blatchford, 2009; Tilbury, 1994; Wilson, 2004). For all these reasons, it can be inferred that early childhood education has a particular value by educating the young generation and helping them gain sustainable awareness and behaviors. Davis and Gibson (2006) emphasized that early experiences in which children engaged during the early childhood period play a determinant role in their stance toward sustainability issues when they become adults. Hence, each opportunity and investment provided for young children in this period can return with positive outcomes to both individuals and the society they live in (Ernst, 2014). On this basis, teachers who have a great capacity to create behavioral changes through their beliefs in children are regarded as change agents for having a sustainable future (Taylor, Nathan, & Coll, 2003). Since young children better learn through direct experiences in order to have an understanding of an issue (Chawla & Cushing, 2007), beliefs, attitudes, and behaviors of preschool teachers can be regarded as quite important. For this reason, it is important to identify sustainable practices of preschool teachers such as their recycling behaviors in order to develop their existing practices and provide them with gaining new behaviors. In turn, young children can be affected by the behaviors of their teachers, as well.

In addition to be an important attempt to understand mechanisms responsible for recycling intentions and behaviors of preschool teachers in Turkey, the findings of this study offer an insight on the possible strategies for the teachers so as to bring forth an awareness regarding a higher level of recycling behavior.

This study confirms previous research findings about the fact that beliefs of preschool teachers affect their behaviors in school settings (e.g. Salonen & Tast, 2013). Hence, school administrators, curriculum developers, faculty members, and policy makers ought to take into account the importance of belief structures of teachers in exhibiting a specific behavior, and provide them with a wealth of equipped educational settings, resources, and opportunities to carry them a step further towards performing the corresponding behavior. Oskampt et al. (1991) indicated that the existence of friends and significant others are an influential factor for individuals to perform recycling behavior. Concordantly, Drelinga and Krastiņa (2011) highlighted that teachers are need of supports of their colleagues in their everyday work, and in turn their work and existence are influential for others, as well. On this basis, Citing Reilly and Logue (2009), and Gordon (2011) strongly emphasized that teachers most willingly learn from their colleagues. However, in a study Olgan (2015) examined the mostly-preferred science topics of preschool teachers and the frequency and time allocation designated by them to teach science in Turkey. Unfortunately, one of the outputs of this study indicated that those teachers did not help each other in fostering their knowledge and ability to teach science. Moreover, half of the participant teachers expressed that they appealed to their colleagues for providing educational materials or had an exchange of ideas regarding the previously-applied activities, whereas only few participant teachers implied that they were supported by school administration to reach materials. Based on the aforementioned research, it can be inferred that preschool teachers are in need of a support of their colleagues and school administration. If their behaviors such as recycling behaviors are supported by those people, and they may indicate a highter rates of recycling beahvior. For this reason, school administrations as a source of subjective norms perceived by preschool teachers should support them to engage in recycling. In pursuit of this aim, they can increase the number of drop off points in classrooms, and schools, for those teachers to toss recyclable materials such as paper, glass, plastics, battery, and aluminums out. In this way, recycling can be regarded by the teachers as an easy behavior to perform in daily life. According to

Jucevičienė and Lepaitė (2003), in-service trainings have an important role in teachers' self-enhancement and self-realization by providing them with significant opportunities to gain new skills and strengthen their existing skills. In this respect, in-service trainings and workshops can be organized for the preschool teachers to help them perform environmentally sound behaviors such as recycling behavior. To illustrate, recycling as a pro-environmental behavior can be integrated into in-service trainings organized for these teachers to have a better understanding about its importance in the education for sustainable development. In this regard, teachers can be informed about the undeniable role of recycling in having a sustainable future through providing basic tips for classroom recycling. These experiences provided for them can strengthen their beliefs, change their perspectives, and help them gain a different point of view in that they can realize the applicability and availability of the performance of recycling. Furthermore, the teachers can see the big picture which indicates that recycling is a promising solution for not only environmental problems but also social and economic problems, and active citizen participation in waste management, especially their participation as the ones raising the next generation, is crucial to deal with those problems.

Moreover, according to revision of the Council of Higher Education (2018) on the subject of undergraduate education in the field of Early Childhood Education, environmental education was integrated into the corresponding undergraduate curriculum as a must course. In this revision, the content of environmental education includes topics such as its basic concepts, its significance, the ways of planning and implementing educational activities based on environmental education for young children (living beings in nature, plants, air, soil, water, recycling, energy saving, environmental pollution, and natural disasters). As can be seen, recycling was implied as an example of important subjects regarding environmental education. At this point, the current study can be a useful source for experts in the field of early childhood education who instill teacher candidates with the necessary theoretical and application-

oriented information, in order to consider mechanisms to influence recycling behaviors of preschool teachers.

Since subjective norms which refers to the social pressure perceived by the preschool teachers with respect to recycling are directly related to the perception of society in relation to recycling, authorities ought to raise awareness of non-recyclers who are not accustomed to engage in recycling and promote awareness of recyclers who perform recycling on a daily basis. In this respect, local, regional, or national programs focusing on recycling can be organized and publicized through different strategies such as usage of media so as to provide an opportunity for citizens to actively involved in waste management through recycling.

To conclude, in consideration of the current findings, this study can be utilized as a guide for school administrators, curriculum developers, faculty members, and policy makers in Turkey to foster early childhood education for sustainable development by means of a specific focus on recycling. This insight can strengthen the evolution of Turkey into a more sustainable society in the close future with the significant supports of preschool teachers who are the architects of the future generations.

5.2.4. Limitations and Recommendations for Future Research

As each and every research study has several limitations, this study also has some limitations which ought to be considered by researchers for further studies. Limitations of the current study and the corresponding recommendations were collected under two main titles including sample-related limitations, and measurement tool-related limitations.

The first group of limitations were related to sample groups of the present study. As a reminder, both pilot and main studies were conducted with the preschool teachers who were working at public schools in Ankara, the capital city of Turkey. The

corresponding data was collected from the participant teachers who were working at public schools in Ankara. However, obtaining data from preschool teachers who were working at public and private schools might be more representative of the sample group and promote external validity. In this respect, future research can incorporate preschool teachers working at private schools into sample group, as well. In addition, convenient sampling technique was preferred for the current study to obtain data from the preschool teachers working at public schools in Ankara. Since this nonrandom sampling technique can have negative impacts on the generalizability of the research findings, more generalizable results can be obtained by using a random sampling strategy in future research.

Besides the sample-related limitations, this study has several limitations regarding measurement tool utilized during the data collection process. For example, the Recycling Behavior Scale for Preschool Teachers has 64 items, whereas Demographic Information Questionnaire has 17 socio-demographic items. Because of the high number of items used in the current study might negatively influence the participant teachers to be focused on the data collection tools. For this reason, the number of items should be carefully considered by future researchers to obtain reliable answers from their participants. Furthermore, recycling behavior dealt in the present study included paper, glass, plastic, battery, and aluminum as waste materials. According to Oskamp et al. (1991), recycling rates of recyclable wastes vary across recyclable materials. For this reason, instead of focusing on waste materials such as paper, glass, plastic, battery, and aluminum together might bring about errors regarding the rate of actual performance based on recycling those materials. In order to minimize the chance of possible errors on this issue, putting a specific focus on a specific type of recycling such as paper recycling can be recommended for researchers in their future studies. Another limitation of this study was related to the way of assessing past recycling behavior. In the current study the item regarding how much you recycled the recyclable materials (paper, glass, plastic, battery, aluminum) during the last year was

addressed to the participant teachers. Since length of time interval is one of the factors which influence the amount of relationship between two constructs and which obstructs to provide accurate responses for items because of the lack of problems about remembering the corresponding past behaviors, time length focused on the items of past recycling behaviors can be shortened to three months or one months in consideration of the existing literature. Another limitation related to the past behavior scale was that it ranged from 1 (none at all) to 7 (always). It may be more effective to change the rate criteria by providing more specific information about each point. For instance, using expressions such as at least once a weak, three times a week, or more than 10 times a week may be utilized in the further studies to help the participant preschool teachers have a clearer understanding of the frequency signified by those numbers. Moreover, last limitation was related to using self-report in the current study to collect data. Although in their meta-analysis on the validity of self-reported measures of pro-environmental behaviors Kormos and Gifford (2014) found that there existed a high correlation between self-reported and objective pro-environmental behaviors, self-reported studies have several disadvantages. For instance, it was highlighted that self-reported measure of behavior can be influenced by subjectivity of expressions (Olson, 1981), inclination of participants to exaggeration (Barr, 2007), and their tendency to provide responses in consideration of social desirability (Milfont, 2009). For this reason, it is recommended that researchers prefer additional and observational techniques such as video-recording, direct observations, and interviews in future research. In addition to those points, further studies can be enhanced through the incorporation of different additional variables into the TPB, and detailed analyses based on the demographic information of participants.

In conclusion, the aforementioned limitations and recommendations can be useful for further studies in which determinants of recycling intentions and behaviors of preschool teachers will be examined.

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APPENDICES

A. DEMOGRAPHIC INFORMATION QUESTIONNAIRE

A. Kişisel Bilgiler

1. Cinsiyetiniz: ❑ Kadın ❑ Erkek
2. Yaşınız: _____
3. Mezun olduğunuz üniversite: _____
4. Eğitim durumunuz: ❑ Meslek lisesi ❑ Ön lisans ❑ 4 yıllık ❑ Yüksek lisans/ Doktora
5. Meslekteki hizmet yılınız: _____
6. Çalıştığınız yaş grubu: ❑ 36-48 aylık ❑ 48-60 aylık ❑ 60-72 aylık
7. Siz dâhil evinizde yaşayan kişi sayısı: _____
8. Çalıştığınız okulda geri dönüşüm kutuları bulunuyor mu? ❑ Evet ❑ Hayır
9. Çalıştığınız sınıfta geri dönüşüm kutuları bulunuyor mu? ❑ Evet ❑ Hayır
10. Çalıştığınız okul eko-okul mu? ❑ Evet ❑ Hayır
11. Yaşadığınız yerde (mahalle, semt, vb.) geri dönüşüm kutuları bulunuyor mu? ❑ Evet ❑ Hayır

	Oldukça Yeterli						**Hiç yeterli değil**	**Fikrim**
	7	**6**	**5**	**4**	**3**	**2**	**1**	**0**
12. Genel olarak okulunuzdaki geri dönüşüm hizmetini nasıl değerlendiriyorsunuz?	❑	❑	❑	❑	❑	❑	❑	❑

13. Çocukluğunuzun geçtiği yeri nasıl tanımlarsınız? ❑ Kentsel ❑ Kırsal

14. Hayatınızı en uzun süre geçirdiğiniz yeri nasıl tanımlarsınız?
❑ Köy/kasaba ❑ İlçe ❑ Şehir merkezi

15. Çocukken en uzun süre yaşadığınız konut türü (müstakil ev/apartman dairesi)
❑ Müstakil ev ❑ Apartman dairesi

16. Çocukluğunuzun geçtiği yerde geri dönüşüm yapma olanağınız var mıydı?
❑ Evet ❑ Hayır

17. Evinize giren toplam aylık gelir:
❑ 1000 TL ve altı ❑ 1001 TL – 3000 TL ❑ 3001 TL – 5000 TL ❑ 5000 TL ve üzeri

B. RECYLCLING BEHAVIOR SCALE FOR PRESCHOOL TEACHERS

Aşağıdaki ifadelerden kendinize uygun olanları seçiniz.	**Tamamen Katılıyorum**						**Kesinlikle Katılmıyorum**
	7	**6**	**5**	**4**	**3**	**2**	**1**
1. Geri dönüşüm yapmanın zaman alıcı olduğuna inanıyorum.	❑	❑	❑	❑	❑	❑	❑
2. Geri dönüşüm yapmanın pratik **olmadığına** inanıyorum.	❑	❑	❑	❑	❑	❑	❑
3. Geri dönüşüm yapmanın çok zor olduğuna inanıyorum.	❑	❑	❑	❑	❑	❑	❑

Aşağıda belirtilen 'geri dönüşüm' davranışı üzerine görüşlerinizi sunulan tanımlamalar doğrultusunda lütfen belirtiniz.

Benim için geri dönüştürülebilir maddelerin (*kâğıt, cam, plastik vb*.) geri dönüşümünü düzenli olarak yapmak ...								
	7	**6**	**5**	**4**	**3**	**2**	**1**	
İyidir	☐	☐	☐	☐	☐	☐	☐	Kötüdür
Gerekli	☐	☐	☐	☐	☐	☐	☐	Gereksiz
Faydalı	☐	☐	☐	☐	☐	☐	☐	Faydasız
Duyarlı	☐	☐	☐	☐	☐	☐	☐	Duyarsızca
Sağlığa uygun	☐	☐	☐	☐	☐	☐	☐	Sağlıksız
Değerli	☐	☐	☐	☐	☐	☐	☐	Değersiz
Doğru	☐	☐	☐	☐	☐	☐	☐	Yanlış
Akılcıdır	☐	☐	☐	☐	☐	☐	☐	Akılcı değildir
Sorumluluk gerektirir	☐	☐	☐	☐	☐	☐	☐	Sorumluluk gerektirmez

Aşağıda belirtilen 'geri dönüşüm' davranışı üzerine görüşlerinizi lütfen belirtiniz.							
Geri dönüşüm yaparsam;	**Tamamen Katılıyorum**						**Kesinlikle Katılmıyorum**
	7	**6**	**5**	**4**	**3**	**2**	**1**
1. Toplum için faydalı bir şey yapmış olurum.	☐	☐	☐	☐	☐	☐	☐
2. Çevreyi korumuş olurum.	☐	☐	☐	☐	☐	☐	☐
3. Çevre sağlığına katkıda bulunmuş olurum.	☐	☐	☐	☐	☐	☐	☐
4. Doğal kaynaklarımızı korumuş olurum.	☐	☐	☐	☐	☐	☐	☐
5. Kirliliği azaltmış olurum.	☐	☐	☐	☐	☐	☐	☐
6. Asit yağmurlarının ve sera etkisinin azalmasına katkıda bulunmuş olurum.	☐	☐	☐	☐	☐	☐	☐
Aşağıdaki ifadelere ne derecede katılıyorsunuz?							
1. Görüşlerine önem verdiğim insanlar geri dönüşüm yapmamı destekler.	☐	☐	☐	☐	☐	☐	☐
2. Benim için önemli olan insanlar benden geri dönüşüm yapmamı beklerler.	☐	☐	☐	☐	☐	☐	☐
3. Bir şey tekrar kullanılabilecek durumda ise onu boşuna **harcamamam** gerektiğine inanırım.	☐	☐	☐	☐	☐	☐	☐
4. Atıklarımı geri **dönüştürmemek** bana göre yanlıştır.	☐	☐	☐	☐	☐	☐	☐
5. Atıklarımı geri **dönüştürmezsem** kendimi suçlu hissederim.	☐	☐	☐	☐	☐	☐	☐
6. Geri dönüşüm **yapmamak** prensiplerime aykırıdır.	☐	☐	☐	☐	☐	☐	☐
7. Atıkların geri dönüşümünü sağlamak için herkes sorumluluğu paylaşmalıdır.	☐	☐	☐	☐	☐	☐	☐
Aşağıda belirtilen kişi ya da kurumlar geri dönüşüm yapmamı bekler;							
1. Yerel yönetimler (örn; belediyeler)	☐	☐	☐	☐	☐	☐	☐
2. Toplum	☐	☐	☐	☐	☐	☐	☐
3. Apartman/Site/Yurt yöneticiniz	☐	☐	☐	☐	☐	☐	☐
4. Okul yönetimi	☐	☐	☐	☐	☐	☐	☐
Aşağıdaki kişi ya da kurumların geri dönüşüm konusundaki beklentileri sizin için ne derece önemlidir?							
1. Yerel yönetimler (örn; belediyeler)	☐	☐	☐	☐	☐	☐	☐
2. Toplum	☐	☐	☐	☐	☐	☐	☐
3. Apartman /Site/ Yurt yöneticiniz	☐	☐	☐	☐	☐	☐	☐
4. Okul yönetimi	☐	☐	☐	☐	☐	☐	☐

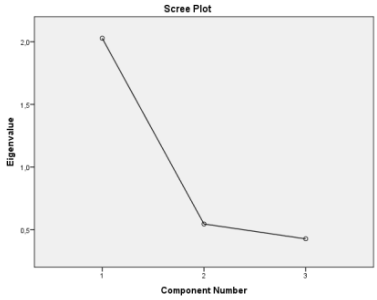
Aşağıdaki ifadelere ne derecede katılıyorsunuz?							
1. Önümüzdeki aylarda geri dönüştürülebilir maddelerin (*kâğıt, cam, plastik vb*.) geri dönüşümünü düzenli olarak yapmak benim için zordur.	☐	☐	☐	☐	☐	☐	☐
2. İstediğim takdirde önümüzdeki aylarda geri dönüştürülebilir maddelerin (*kâğıt, cam, plastik vb*.) geri dönüşümünü düzenli olarak yapmak benim elimdedir.	☐	☐	☐	☐	☐	☐	☐
3. Bazı dış etkenler önümüzdeki aylarda geri dönüştürülebilir maddelerin (*kâğıt, cam, plastik vb*.) geri dönüşümünü düzenli olarak yapmamı engelleyebilir.	☐	☐	☐	☐	☐	☐	☐
Aşağıdaki ifadelere ne derecede katılıyorsunuz?	**Tamamen Katılıyorum**						**Kesinlikle Katılmıyorum**
1. Hangi atıkların geri dönüştürülebilir olduğunu biliyorum.	☐	☐	☐	☐	☐	☐	☐
2. Atıkları geri dönüşüm için nasıl ayırmam gerektiğini biliyorum.	☐	☐	☐	☐	☐	☐	☐
3. Ayırdığım geri dönüşüm malzemelerini hangi kutulara atmam gerektiğini **bilmiyorum**.	☐	☐	☐	☐	☐	☐	☐
4. Çalıştığım okuldaki düzenlemeler geri dönüşüm yapmamı kolaylaştıracak şekildedir.	☐	☐	☐	☐	☐	☐	☐
5. Yakın çevremde geri dönüşüm kutuları var.	☐	☐	☐	☐	☐	☐	☐
Aşağıdaki koşullar/ durumların sağlanması geri dönüşüm *yapmamı* kolaylaştırır*:*							
1. Hangi atıkların geri dönüştürülebilir olduğunu bilmek	☐	☐	☐	☐	☐	☐	☐
2. Atıkları geri dönüşüm için nasıl ayırmam gerektiğini bilmek	☐	☐	☐	☐	☐	☐	☐
3. Çalıştığım okuldaki düzenlemelerin geri dönüşüm yapmamı kolaylaştıracak şekilde olması	☐	☐	☐	☐	☐	☐	☐
4. Yakın çevremde geri dönüşüm kutularının bulunması	☐	☐	☐	☐	☐	☐	☐
5. Ayırdığım geri dönüşüm malzemelerini hangi kutulara atmam gerektiğini bilmek	☐	☐	☐	☐	☐	☐	☐
Aşağıdaki ifadelere ne derecede katılıyorsunuz?							
1. Önümüzdeki aylarda geri dönüştürülebilir maddelerin (*kâğıt, cam, plastik vb*.) geri dönüşümünü düzenli olarak yapmaya çalışacağım.	☐	☐	☐	☐	☐	☐	☐
2. Önümüzdeki aylarda geri dönüştürülebilir maddelerin (*kâğıt, cam, plastik vb*.) geri dönüşümünü düzenli olarak yapmayı planlıyorum.	☐	☐	☐	☐	☐	☐	☐

Geri dönüşüm ile ilgili aşağıdaki durumlar sizin için ne derece önemlidir?	**Çok önemli**						**Hiç önemli değil**
	7	**6**	**5**	**4**	**3**	**2**	**1**
1. Toplum için faydalı bir şeylerin yapılması	☐	☐	☐	☐	☐	☐	☐
2. Çevrenin korunması	☐	☐	☐	☐	☐	☐	☐
3. Çevre sağlığına katkıda bulunmak	☐	☐	☐	☐	☐	☐	☐
4. Doğal kaynaklarımızın korunması	☐	☐	☐	☐	☐	☐	☐
5. Kirliliğin azalması	☐	☐	☐	☐	☐	☐	☐
6. Asit yağmurlarının ve sera etkisinin azalması	☐	☐	☐	☐	☐	☐	☐

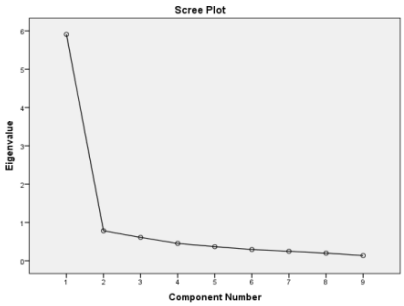
Aşağıda belirtilen **her bir** malzemenin geri dönüşümünü hem **geçtiğimiz yıl içinde** hem de **son günlerde** hangi sıklıkla yapmış olduğunuzu belirtiniz		**Her zaman**						**Hiçbir zaman**
		7	**6**	**5**	**4**	**3**	**2**	**1**
Kağıt	**Geçtiğimiz yıl içinde**	☐	☐	☐	☐	☐	☐	☐
	Son günlerde	☐	☐	☐	☐	☐	☐	☐
Cam şişe	**Geçtiğimiz yıl içinde**	☐	☐	☐	☐	☐	☐	☐
	Son günlerde	☐	☐	☐	☐	☐	☐	☐
Pet şişe, plastik	**Geçtiğimiz yıl içinde**	☐	☐	☐	☐	☐	☐	☐
	Son günlerde	☐	☐	☐	☐	☐	☐	☐
Pil	**Geçtiğimiz yıl içinde**	☐	☐	☐	☐	☐	☐	☐
	Son günlerde	☐	☐	☐	☐	☐	☐	☐
Aluminyum kutu	**Geçtiğimiz yıl içinde**	☐	☐	☐	☐	☐	☐	☐
	Son günlerde	☐	☐	☐	☐	☐	☐	☐

C. SCREE PLOTS OF THE DIRECT MEASUREMENTS IN EXPLORATORY FACTOR ANALYSIS

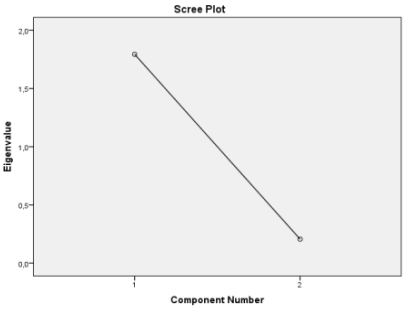
1) Convenience



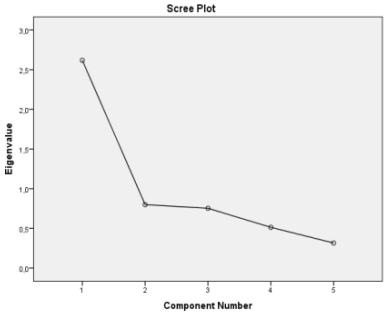
2) Attitude toward Behavior



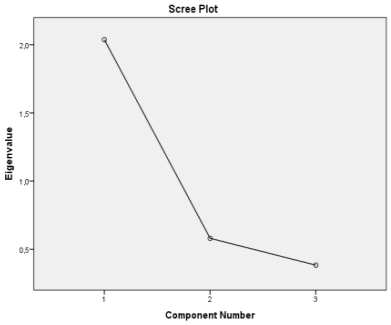
3) Subjective Norm



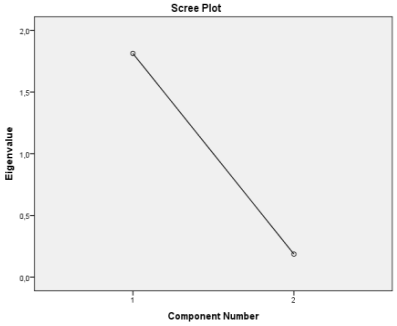
4) Moral Norm



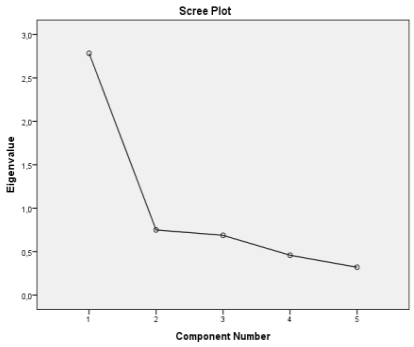
5) Perceived Behavioral Control



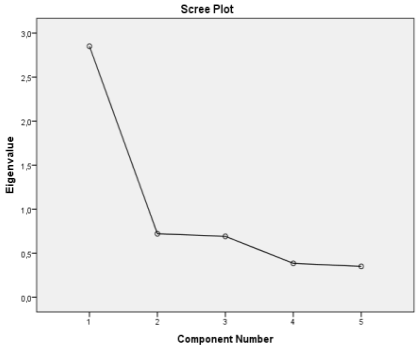
6) Intention



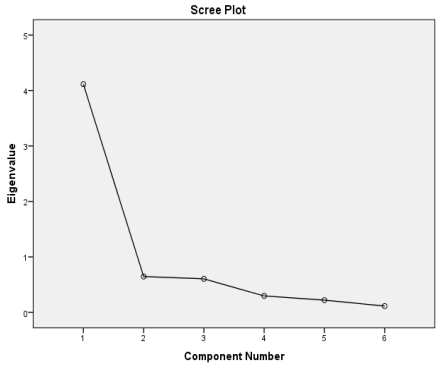
7) Past Behavior



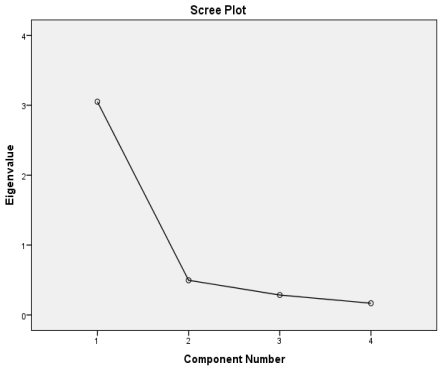
8) Current Behavior



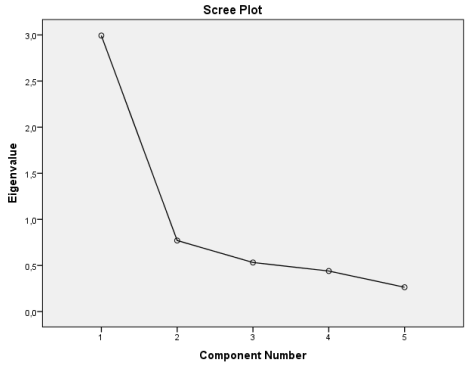
9) Behavioral Belief



10) Normative Belief



11) Control Belief



D. PERMISSION OBTAINED FROM METU HUMAN SUBJECTS ETHICS COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

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Sayı: 28620816 / 164

08 MART 2017

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Doç. Dr. Refika OLGAN;

Danışmanlığını yaptığınız Ezgi ŞENYURT' un ***"Okul Öncesi Öğretmenlerinin Geri Dönüşüm Davranışlarını Etkileyen Değişkenlerin İncelenmesi"*** başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek gerekli onay **2017-EGT-033** protokol numarası ile **21.03.2017 – 31.12.2017** tarihleri arasında geçerli olmak üzere verilmiştir.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Canan SÜMER
İnsan Araştırmaları Etik Kurulu Başkanı

Prof. Dr. Mehmet UTKU
İAEK Üyesi

Prof. Dr. Ayhan SOL
İAEK Üyesi

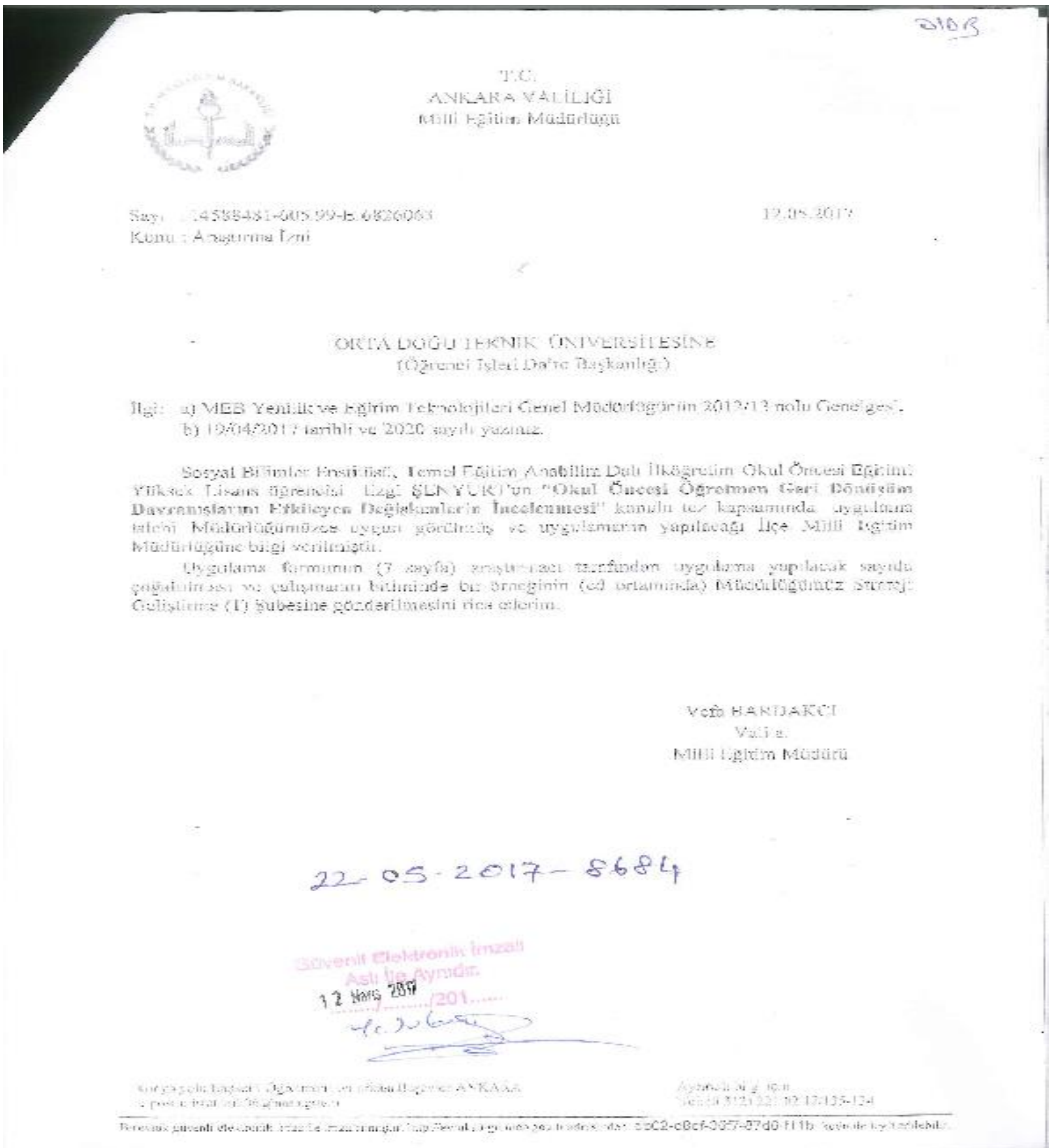
Prof. Dr. Ayhan Gürbüz DEMİR
İAEK Üyesi

Doç. Dr. Yaşar KONDAKÇI (Y.)
İAEK Üyesi

Yrd. Doç. Dr. Pınar KAYGAN
İAEK Üyesi

Yrd. Doç. Dr. Emre SELÇUK
İAEK Üyesi

E. PERMISSION OBTAINED FROM PROVINCIAL DIRECTORATE FOR NATIONAL EDUCATION IN ANKARA



T.C.
ANKARA VALİLİĞİ
Milli Eğitim Müdürlüğü

Sayı : 14588481-605.99-E.6826063 12.05.2017
Konu : Araştırma İzni

ORTA DOĞU TEKNİK ÜNİVERSİTESİNE
(Öğrenci İşleri Daire Başkanlığı)

İlgi: a) MEB Yenilik ve Eğitim Teknolojileri Genel Müdürlüğünün 2012/13 nolu Genelgesi.
b) 19/04/2017 tarihli ve 2020 sayılı yazınız.

Sosyal Bilimler Enstitüsü, Temel Eğitim Anabilim Dalı İlköğretim Okul Öncesi Eğitimi Yüksek Lisans öğrencisi Ezgi ŞENYURT'un **"Okul Öncesi Öğretmen Geri Dönüşüm Davranışlarını Etkileyen Değişkenlerin İncelenmesi"** konulu tez kapsamında uygulama talebi Müdürlüğümüzce uygun görülmüş ve uygulamanın yapılacağı İlçe Milli Eğitim Müdürlüğüne bilgi verilmiştir.

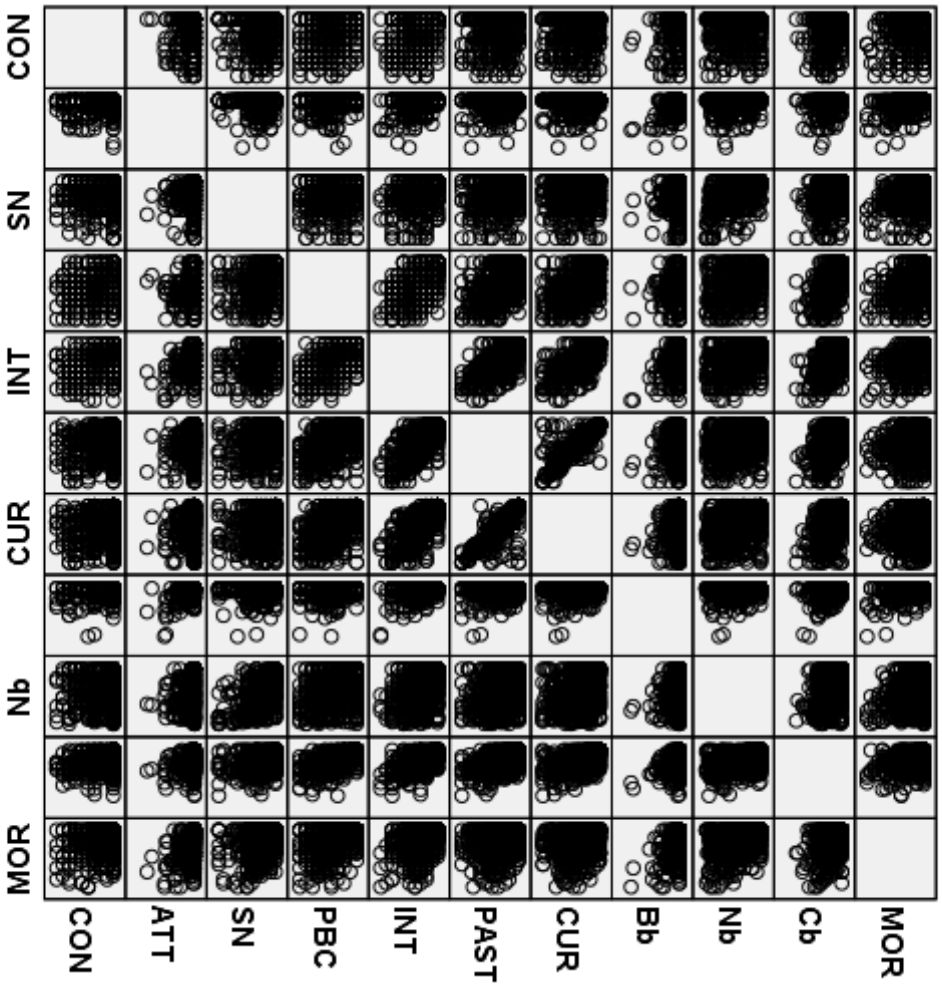
Uygulama formunun (7 sayfa) araştırmacı tarafından uygulama yapılacak sayıda çoğaltılması ve çalışmanın bitiminde bir örneğinin (cd ortamında) Müdürlüğümüz Strateji Geliştirme (1) Şubesine gönderilmesini rica ederim.

Vefa BARDAKCI
Vali a.
Milli Eğitim Müdürü

22-05-2017-8684

Güvenli Elektronik İmzalı
Aslı ile Aynıdır.
12 Mayıs 2017

F. LINEARITY



G. TURKISH SUMMARY /TÜRKÇE ÖZET

1. GİRİŞ

Dünya tarihinin en önemli atılımlarından biri olarak görülen ve modern sanayileşmenin temeli olan sanayi devrimi, insanoğlunu üretime bağımlı yapmıştır (Inglehart ve Baker, 2000). Böylece, mal ve hizmet aktarımları ulusal sınırları aşmış, ekonomik büyüme hızlanmış ve uluslar diğerlerinin kaynaklarına bağımlı hale gelmiştir (Stromquist, 2002). Bu ekonomik eylemin sonucu olarak uluslararası düzeyde büyük miktarda atık üretilmiştir (Daly ve Farley, 2004). Sanayileşmeyle yaşanan nüfus artışıyla doğal kaynaklara ihtiyaç artmış ve doğal kaynaklar hızla tahrip tüketilmeye başlamıştır (Hobsbawm, 1968). Bu tüketim etkinlikleriyle açığa çıkan atıklarsa, endişe verici düzeye ulaşmıştır (El-Assaly ve Ralph Ellis, 2001). Örneğin, kentsel katı atıkların miktarı yılda 1.3 milyar metrik tona ulaşmıştır ve 2025'e kadar neredeyse iki katına çıkması beklenmektedir (Clark ve Matharu, 2013).

Çevresel, sosyal ve ekonomik sorunları tetikleyen atık problemi (bk. Gutberlet, 2008) ''onarıp kullanan toplum'' halinden ''tüketim toplumu'' haline gelindiğini işaret etmektedir (Lave ve diğerleri, 1999). İnsan etkinlikleri sonuncu açığa çıkan atıklar gezegenin ayrılmaz parçası olan insanoğlunu (Misiaszek, 2012) özellikle de çocukları etkilemiştir (Hofferth ve Curtin, 2005). Öyleki, katı atık bertarafının etkilerine maruz kalan öncelikli gruplar arasında okul öncesi çocukları da gösterilmiştir (Alam ve Ahmade, 2013). Benzer şekilde, çocuklar tahrip edilen doğal çevreyle daha az iletişim kurmaya başlamış (Edwards ve diğerleri, 2012) ve bu durum Louv (2005) tarafından ''doğa yoksunluğu sendromu'' olarak adlandırmıştır.

İnsanların sürdürülebilir olmayan yaşam tarzlarının etkilerini silebilmek için birbiriyle ilişkili üç bileşeni (çevre, ekonomi ve toplum) içeren ''sürdürülebilir kalkınma'' (SK)

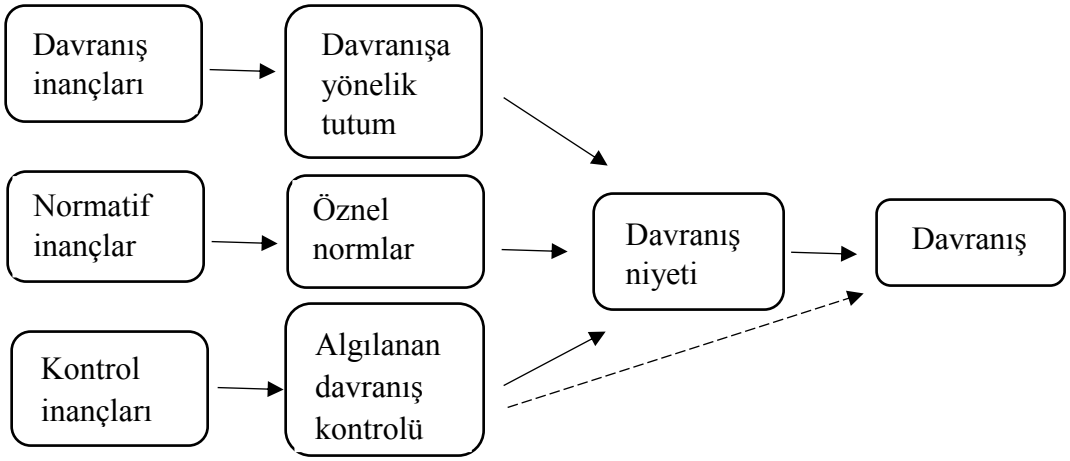
kavramı ortaya çıkmıştır (Peterson, 1997). Dahası, sürdürülebilir bir geleceğe ulaşmada çevre dostu davranışların önemi vurgulanmış (WCED, 1987) ve geri dönüşüm bu davranışlar arasından en çok umut vaad eden olmuştur (Cheung ve diğerleri, 1999). Ham madde talebini ve çevre kirliliğini azaltarak küresel atıkların yönetimini sağlayan geri dönüşüm, SK'yi destekleyen önemli bir çevre dostu davranış olmuştur (Bing ve diğerleri, 2015). SK için küresel girişimlerin aciliyetine dikkat çekilmesiyle çocukların çevre farkındalıklarına ve sorumluluklarına vurgu yapılmıştır (UNCED, 1992). Bu bağlamda, bireylere uygun tutum ve davranış kazandırabilmek; onların küresel konulara farkındalıklarını arttırabilmek; kaynakları koruyan ve sürdüren nesiller yetiştirebilmek için eğitim SK'nin merkezine alınmıştır (UNESCO, 1997b). Ayrıca, bireylerin bireysel, toplu, yerel ve küresel karar alabilmesini sağlayan değer ve beceriler edinmesini sağlayan Sürdürülebilir Kalkınma için Eğitim'in (SKE) önemi belirtilmiştir (Sürdürülebilir Kalkınma Eğitim Paneli, 1998).

Okul öncesi eğitim, SKE'nin başlangıç noktası olarak değerlendirilmiştir (UNESCO, 1997b). Gothenburg Sürdürülebilir Kalkınma Eğitimi Önerileri'nde bilişsel, fiziksel, sosyo-duygusal, dil ve kişisel gelişimi destekleyerek sıfır sekiz yaş grubu çocuklara planlı eğitim sağlayan erken çocukluk eğitiminin önemine vurgu yapılmıştır (Gordon ve Browne, 2008). Çocukların dünyayı anlayabilmelerini ve yaşam becerilerini geliştirebilmelerini potansiyelleri, erken çocukluk eğitimini SKE için ‘‘doğal bir başlangıç noktası’’ yapmıştır (Doverborg ve Pramling-Samuelsson, 2000). Bu dönemde özkimlik oluşumunu sağlayan temel yaşam becerileri kazanıldığı için (Pramling-Samuelsson ve Kaga, 2008) SK'yle ilgili bilgi, tutum ve değerlerin temelleri erken çocuklukta atılmalıdır (Pramling-Samuelsson, 2011).

Çocukların sürdürülebilir davranışları öğrenmelerini destekleyen okul öncesi öğretmenleri SK'de önemli roller üstlenmektedirler (Elliot ve Davis, 2009). Çocukların SK'ye yönelik deneyimler edinmesinde davranışlarıyla rol modellik yapan okul öncesi öğretmenleri (Vining ve Ebreo, 1992) aynı zamanda onların çevre

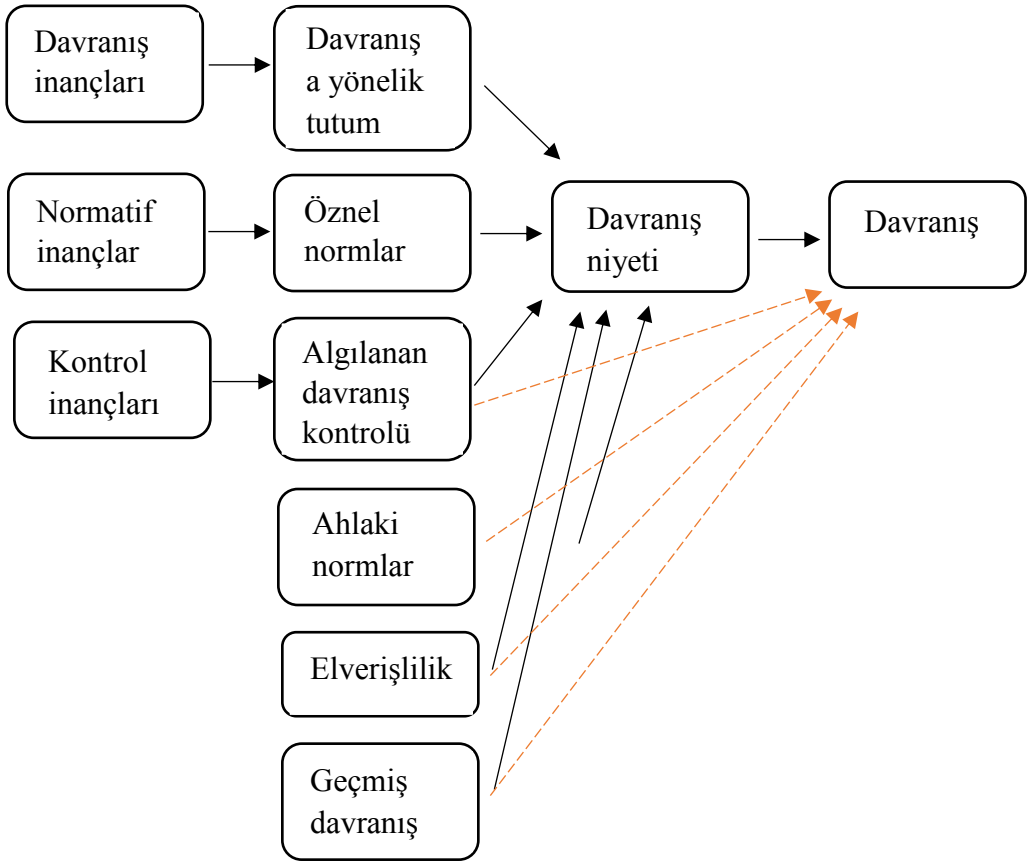
farkındalıklarını ve problem çözme becerilerini geliştirdiklerinden SK için katalizör işlevi görmektedirler (Beckford, 2008). Dahası, okul öncesi öğretmenleri davranışları aracılığıyla farkında olarak veya olmayarak kendi inançlarını, tutumlarını ve değer yargılarını çocuklara aktarmaktadırlar (Salonen ve Tast, 2013). Çocuklar bu dönemde, yaşamlarını etkileyecek temel inanç, tutum, davranış ve alışkanlıkları edindiklerinden, eğitimlerinden sorumlu olan okul öncesi öğretmenlerinin tutumları, becerileri ve davranışları çok önemlidir (Wells ve Lekies, 2006). Çocuklar çevrelerinde olanların farkında oldukları için SKE konularını anlayabilmek ve geri dönüşüm gibi çevre dostu davranışları sergileyebilmek için büyük potansiyele sahiptirler (Davis ve Gibson, 2006). Bu bağlamda, çocukların inanç sistemlerinin ve davranışlarının yetişkinlerden daha kolay değişebilmesine rağmen, büyüdükçe değişime daha fazla dirençli olmaktadırlar (Frisk ve Larson, 2011). Bu nedenle, davranışlarıyla çocuklara rol modellik yapan ve uygun davranışlar kazandıran okul öncesi öğretmenlerinin geri dönüşüm davranışlarını belirleyen faktörlerin anlaşılması, yeni neslin geri dönüşüm davranışını kalıcı şekilde benimsemesine katkıda bulunabilir.

Geri dönüşüm davranışını belirleyen etkenler çeşitli teorilerden faydalanılarak araştırılsa da en öne çıkan teoriler Akla Dayalı Davranış Teorisi ([ADDT], Ajzen ve Fishbein, 1980) ve geliştilen versiyonu Planlanmış Davranış Teorisi'dir ([PDT], Ajzen ve Fishbein, 1991). Bu çalışmada PDT değişkenleri (inançlar, tutum, öznel normlar, algılanan davranış kontrolü, niyet ve davranış) ile ek değişkenler (ahlaki normlar, elverişlilik ve geçmiş davranış) okul öncesi öğretmenlerinin geri dönüşüm niyetlerini ve davranışlarını belirleyen faktörleri araştırmak için kullanılmıştır. PDT özünde bireylerin davranışa yönelik tutumlarını, öznel normlarını ve algılanan davranış kontrollerini sırasıyla belirleyen davranış inançları, normatif inançlar ve kontrol inançlarını içerir. Ayrıca, davranışın temel belirleyicisi olan davranışa niyeti bu üç değişken tarafından açıklanır (Ajzen ve Fishbein, 2005). PDT'nin şematik görüntüsü Şekil 1'de gösterilmiştir.



Şekil 1. Planlanmış davranış teorisi (Ajzen, 2005)

Ajzen (1991), ek yordayıcı değişkenler yardımıyla bir araştırma modelinin yordama becerisinin arttırılabileceğini belirtmiştir. Bu bağlamda, bu çalışmanın araştırma modeline, okul öncesi öğretmenlerinin geri dönüşüm niyetlerini ve davranışlarını etkileyeceği düşünülen değişkenler Şekil 2'deki gibi eklenmiştir.



Şekil 2. Araştırma modeli

Bu çalışma kapsamında ele alınan araştırma soruları aşağıdaki gibi belirlenmiştir:

1. Okul öncesi öğretmenlerinin geri dönüşüm davranışına yönelik tutumları, öznel normları, algılanan davranış kontrolü, geçmiş geri dönüşüm davranışları, geri dönüşüme elverişliliği, ahlaki normları, geri dönüşüm niyetleri ve güncel geri dönüşüm davranışları nelerdir?

2. Okul öncesi öğretmenlerinin davranış inançları, normative inançları ve kontrol inançları sırasıyla geri dönüşüm davranışına yönelik tutumları, öznel normları ve algılanan davranış kontrolüyle nasıl ilişkilidir?

3. Okul öncesi öğretmenlerinin geri dönüşüm davranışına yönelik tutumları, öznel normları, algılanan davranış kontrolü, geçmiş geri dönüşüm davranışı, geri dönüşüme elverişliliği ve ahlaki normları geri dönüşüm niyetleriyle nasıl ilişkilidir?

4. Okul öncesi öğretmenlerinin algılanan davranış kontrolü, geçmiş geri dönüşüm davranışı, geri dönüşüme elverişliliği ve ahlaki normları geri dönüşüm davranışlarıyla nasıl ilişkilidir?

1.1. Araştırmanın Önemi

Son yıllarda, ihtiyaçlarını karşılayabilmek için doğal kaynaklara gereksinim duyan ve bu kaynakların sınırsız olduğunu düşünen insan sayısı hızla artmıştır (Liu, 2009). Bunun sonucunda, dünya genelinde çevresel, toplumsal ve ekonomik problemlerde belirgin bir artış yaşanmış (UNEP, 2015) ve yaşanan bu olumsuzluklar sürdürülebilir bir toplumun inşası için bireylerin sürdürülebilir olmayan davranışlarının acilen çevre dostu davranışlara dönüştürülmesini zorunlu kılmıştır (Clayton ve Myers, 2009).

Günümüzdeki çevre problemleri çoğunlukla insanların çevreye yönelik olumsuz tutum ve davranışlarından kaynaklanmaktadır (Maloney ve Ward, 1973). Bu sebeple, çevre sorunlarının gidermek ve kalıcı davranışlar kazandırmak için eğitim etkili bir yol olarak görülmüştür (Yorek ve diğerleri, 2010). Ayrıca, temel tutum ve davranışların kazanıldığı erken çocukluk yılları, sürdürülebilir bir gelecek için çocukların çevre konularıyla ilgili gerekli becerileri kazanmalarında taşımaktadır (Kos ve diğerleri, 2016).

Diğer çevre dostu davranışların temeli olan geri dönüşüm davranışı, iklim değişikliği, çevre kirliliği, kaynak tüketiminin azaltılması gibi sorunların üstesinden gelmede umut vaad etmektedir (Worrell ve Reuter, 2014). İnanç ve davranış sistemlerinin çoğunluğunun temeli hayatın erken yıllarında atıldığı için, çocukları uygun inanç ve davranışlarla donatmak büyük önem taşımaktadır. Bu noktada, çocukların çevreye farkındalıklarını arttırmada, onlara gerekli becerileri kazandırmada ve SKE kavramlarının bilincinde bireyler yetiştirmede okul öncesi öğretmenleri kilit rol üstlenmektedir (Elliot ve Davis, 2009). Geleceğin karar merciilerini ve bilinçli bireylerini yetiştiren okul öncesi öğretmenleri farkında olarak veya olmadan geri dönüşüm gibi konularda kendi inançlarını ve tutumlarını davranışlarıyla çocuklara aktardıkları için (Salonen ve Tast, 2013), onların geri dönüşüm davranışlarını belirleyen parametreleri araştırmak oldukça önemlidir.

Bu çalışmada, okul öncesi öğretmenlerinin geri dönüşüm davranışlarını belirleyen faktörler incelenmiştir. Çalışmanın teorik altyapısını, komplike insan davranışlarını akılcı ve detaylı incelemesi (Manfredo, 2008), içerdiği değişkenlerin kalıcı davranış değişikliğini açıklamadaki becerisi (Ham, 2013), ek yordayıcı değişkenlerin entegre edilmesine olanak tanıması (Ajzen, 1991), çevre çalışmalarıyla sosyal bilimler arasında köprü olması (Miller, 2017) ve meta analiz çalışmalarıyla desteklenen yordama gücünden dolayı (örn. Armitage ve Conner, 2001), ek değişkenlerin dahil edildiği PDT oluşturmaktadır. Alanyazındaki çalışmaların sonuçları tutarsız olduğu için ve alanyazında okul öncesi öğretmenlerinin geri dönüşüm davranışını etkileyen faktörleri araştıran bir çalışmaya araştırmacının bilgisi dahilinde rastlanmadığı için, bu çalışmada okul öncesi öğretmenlerinin geri dönüşüm davranışlarını belirleyen etkenler PDT değişkenleri (inançlar, davranışa yönelik tutum, örnel normlar, algılanan davranış kontrolü, niyet ve davranış) ve ek değişkenler (ahlaki normlar, elverişlilik ve geçmiş geri dönüşüm davranışı) aracılığıyla incelenmiştir.

2. YÖNTEM

2.1. Araştırma Deseni

Okul öncesi öğretmenlerinin geri dönüşüm davranışını etkileyen faktörlerin araştırıldığı bu çalışmada, değişkenler arasındaki ilişki değişkenlere müdahale edilmeksizin araştırıldığı için korelasyon araştırma deseni kullanışmıştır (Tabachnick ve Fidell, 2001). Nicel araştırmalarda sıkça kullanılan tarama yöntemi ise çalışmada veri toplama yöntemi olarak kullanılmıştır (Fraenkel, 2012).

2.2. Örneklem

Ankara ilinin devlet kurumlarında çalışan tüm okul öncesi öğretmenleri bu çalışmanın hedef popülasyonunu oluşturmaktadır. Ankara ilinin dokuz merkez ilçesinde (Altındağ, Çankaya, Etimesgut, Gölbaşı, Keçiören, Mamak, Pursaklar, Sincan ve Yenimahalle) devlet kurumlarında çalışan tüm okul öncesi öğretmenleri ise bu çalışmanın ulaşılabilir popülasyonunu oluşturmaktadır. Çalışmanın örneklemini, Ankara ilinin bahsedilen dokuz merkez ilçesindeki devlet okullarında çalışan 584 okul öncesi öğretmeni oluşturmaktadır.

2.3. Veri Toplama Araçları

Bu çalışmada, ‘‘Demografik Bilgi Anketi’’ ve ‘‘Okul Öncesi Öğretmenleri için Geri Dönüşüm Davranışı Anketi’’ veri toplama araçları olarak kullanılmıştır. Çalışmada kullanılan veri toplama araçları, bu araçların kaynakları ve içerdikleri değişkenler Tablo 2.3.1’de detaylı bir şekilde gösterilmiştir.

Tablo 2.3.1

Çalışmada Kullanılan Veri Toplama Araçları, Kaynakları ve Araştırma Değişkenleri

Veri toplama araçları	Kaynaklar	İlgili değişkenler
Demografik Bilgi Anketi	Araştırmacı tarafından geliştirildi.	Katılımcılarla ilgili kişisel bilgiler (örn. cinsiyet, yaş, meslekteki hizmet yılı, çalıştığı yaş grubu)
		Geri dönüşümle ilgili bilgiler (örn. okuldaki, sınıftaki ve yaşadığı yerdeki geri dönüşüm hizmetleri, çocukluğunda en uzun süre yaşadığı konut tipi, çocukluğunun geçtiği yerde geri dönüşüm hizmetlerinin varlığı, aylık gelir)
Okul Öncesi Öğretmenleri için Geri Dönüşüm Davranışı Anketi	Sürdürülebilir bir Kampüs için Geri Dönüşüm Davranışı, Tututmu ve Değerleri Anketi (Tekkaya, Kılıç ve Şahin, 2011)	PDT değişkenleri (tutum, davranış inançları ve davranış sonuçlarının değerlendirilmesi; öznel normlar, normative inançlar ve bu normlara uyum sağlama motivasyonu; algılanan davranış kontrolü, kontrol inançları ve kontrolün gücü; davranış niyeti, güncel davranış, geçmiş geri dönüşüm davranışı)
	Geri Dönüşüm Anketi (Gadiraju, 2016)	Ahlaki normlar ve elverişlilik

Okul Öncesi Öğretmenleri için Geri Dönüşüm Davranışı Anketi'nin geçerliliğini ve güvenirliğini test etmek için yapılan pilot çalışmaya Ankara ilinin dokuz merkez ilçesindeki devlet kurumlarında çalışan 294 okul öncesi öğretmeni katılmıştır. Pilot çalışma kapsamında yapılan açımlayıcı faktör analizi sonucunda değişkenlerin boyutları belirlenmiş ve bu boyutlar doğrulayıcı faktör analizi aracılığıyla doğrulanmaya çalışılmıştır. Araştırma modeli, ölçüm modeli ve yapısal model değerlendirmeleriyle değerlendirilmiştir. Ölçüm modeli kapsamında, araştırma modeli iç tutarlılık güvenirliğini ve uyum geçerliğini sağlamasına rağmen, geçmiş davranış değişkeni ayırdedici geçerliği sağlayamamıştır. Bu nedenle, bu değişken yapısal eşitlik modellemesi analizine dahil edilmemiştir. Yapısal model değerlendirildiğinde ise

uyumluluk göstergeleri uygun aralıklarda bulunmuştur ($\chi 2/df = 4.36$, RMSEA = .076, SRMR = .067, CFI = .92; NFI = .91, NNFI = .92, GFI= .75; AGFI= .72).

2.4. Veri Analiz Süreci

Çalışmada toplanılan verilen betimsel analizler ve yol analizi yapısal eşitlik modellemesi kullanılarak analiz edilmiştir. Okul öncesi öğretmenlerinin geri dönüşüm davranışına yönelik tutumları, öznel normları, algılanan davranış kontrolü, geçmiş geri dönüşüm davranışları, geri dönüşüme elverişliliği, ahlaki normları, geri dönüşüm niyetleri ve güncel geri dönüşüm davranışları, betimsel analizler IBM SPSS 22.0 paket programında sağlanan betimsel analizler sonucunda açıklanmıştır. Araştırma modelinin test ederken ise, LISREL 8.8 programında sağlanan kovaryans temelli yapısal eşitlik modellemesi kullanılmıştır.

3. BULGULAR

Okul öncesi öğretmenlerinin geri dönüşüm davranışına yönelik tutumları, öznel normları, algılanan davranış kontrolü, geçmiş geri dönüşüm davranışları, geri dönüşüme elverişliliği, ahlaki normları, geri dönüşüm niyetleri ve güncel geri dönüşüm davranışları betimsel istatistik kullanılarak araştırılmıştır. Sonuçlar okul öncesi öğretmenlerinin geri dönüşümün olumlu sonuçları olduğunu düşündüğünü (*Ort* = 6.90, *Ss* = .29), bu sonuçlara dair olumlu değerlendirme yaptığını (*Ort* = 6.88, *Ss* = .39) ve geri dönüşümle ilgili olumlu tutum beslediğini göstermiştir (*Ort* = 6.83, *Ss* = .41). Benzer şekilde, öğretmenler çevrelerinden geri dönüşüm yapmaları için onaylanma inancı beslemekte (*Ort* = 4.75, *Ss* = 1.81), bu onaylara uyum göstermekte (*Ort* = 6.02, *Ss* = 1.40) ve çevrelerinden onay beklemektedirler (*Ort* = 5.59, *Ss* = 1.33). Ayrıca, öğretmenlerin geri dönüşüm davranışlarını kolaylaştıracak etkenlerin varlığına dair inancı olduğu (*Ort* = 5.79, *Ss* = .88), bu inancın güçlü olduğu (*Ort* = 6.76, *Ss* = .57) ve geri dönüşüm davranışlarını kolaylaştıracak etkenlerin olduğu bulunmuştur (*Ort* = 5.84, *Ss* = .82). Dahası, öğretmenlerin geri dönüşüm yapma niyetinde oldukları (*Ort* = 5.52, *Ss* = 1.15), son bir yıl içerisinde geri dönüşüm yaptıkları (*Ort* = 5.12, *Ss*

= 1.45) ve şuan da geri dönüşüm davranışı sergiledikleri sonucuna ulaşılmıştır (*Ort* = 4.96, *Ss* = 1.55). Ayrıca, öğretmenlerin geri dönüşüm davranışını erişilebilir bulduğu (*Ort* = 6.50, *Ss* = .73) ve olumlu ahlaki normları olduğu bulunmuştur (*Ort* = 6.40, *Ss* = .67).

Yapısal model analizi, öğretmenlerin davranış inançlarının tutumlarının %33'ünü orta düzeyde bir etki büyüklüğü ile anlamlı düzeyde yordadığını göstermiştir (β = .57, t = 16.77, p = .000). Ayrıca, öğretmenlerin normatif inançları öznel normların %34'ünü orta düzeyde bir etki büyüklüğü ile anlamlı olarak açıklamıştır (β = .58, t = 17.34, p = .000). Kontrol inançları ise, algılanan davranış kontrolünün %38'ini orta düzeyde bir etki büyüklüğü ile anlamlı düzeyde açıklamıştır (β = .62, t = 19.00, p = .000). Öğretmenlerin sırasıyla algılanan davranış kontrolü (β = .55, t = 17.25, p = .000), tutumları (β = .18, t = 5.57, p = .000), öznel normları (β = .16, t = 5.07, p = .000) ve erişilebilirlikleri (β = .12, t = 4.06, p = .000) orta düzeyde bir etki büyüklüğü ile niyetlerini yordamış ve %44'ü açıklanmıştır. Geçmiş geri dönüşüm davranışı analize dahil edilmezken; öğretmenlerin ahlaki normları niyetlerini açıklayamamıştır (β = -,04 t = -1.29, p = .246).

Öğretmenlerinin geri dönüşüm davranışları sırasıyla niyetleri (β = .63, t = 16.82, p = .000) ve algılanan davranış kontrolü (β = .12, t = 3.27, p = .020) tarafından yüksek düzeyde bir etki büyüklüğü ile istatistiksel olarak anlamlı düzeyde yordanmış ve %50'si açıklanmıştır. Fakat, öğretmenlerin ahlaki normları (β = -.01, t = -.18, p = .740) ve erişilebilirlikleri (β = -.02, t = -.49, p = .656) geri dönüşüm davranışlarının açıklanan varyansına katkı sağlamamıştır.

4. TARTIŞMA VE ÖNERİLER

Okul öncesi öğretmenlerinin geri dönüşüm davranışlarını etkileyen değişkenlerin incelendiği bu çalışmada, betimsel analizler sonucunda, öğretmenlerinin tutumlarının ve davranış inançlarının yüksek oluşu geri dönüşüm davranışına olumlu tutum beslediklerini, öznel normlarının ve normatif inançlarının yüksek oluşu geri dönüşüm

yapmaları için çevre baskısını algıladıklarını ve algıladıkları davranış kontrolü ile kontrol inançlarının yüksek oluşu geri dönüşüm yapmanın kendi ellerinde olduğunu göstermiştir. Benzer şekilde, öğretmenlerinin geri dönüşüm niyetleri ve güncel geri dönüşüm davranışları yüksek bulunmuştur. Betimsel analizler öğretmenlerin geri dönüşümle ilgili olumlu kişisel normları olduğunu, bu davranışı erişilebilir bulduklarını ve son bir yılda sıkça geri dönüşüm yaptıklarını da göstermiştir.

Yol analizi yapısal eşitlik modellemesi, davranış, normatif ve kontrol inançlarının sırasıyla öğretmenlerinin geri dönüşüm tutumlarını, öznel normlarını ve algılanan davranış kontrolünü orta düzeyde bir etki büyüklüğü ile anlamlı düzeyde yordadığını göstermiştir. Bu çalışmanın sonuçları, Hong Kong'daki üniversite öğrencilerinin kağıt geri dönüştürme davranışlarını belirleyen faktörleri araştıran Cheung ve diğerlerinin (1999) sonuçlarıyla benzerlik göstermektedir. Bu araştırmacılar, inançlar ve PDT değişkenleri arasındaki en güçlü ilişkiyi sırasıyla davranış inançları ve tutum, normatif inançlar ve öznel normlar ve kontrol inançları ve algılanan davranış kontrolü arasında bulunmuşken; güncel çalışmada en güçlü ilişki kontrol inançlar ve algılanan davranış kontrolü, normatif inanç ve öznel normlar ve davranış inançları ve tutum arasında bulunmuştur. Sonuçlar arasındaki fark, dünya üzerinde en çok atık üreten ülke olan Çin'de (Hoornweg ve Bhada-Tata, 2012) yaşayan öğrencilerin bu çalışmaya katılan okul öncesi öğretmenlerine kıyasla atıkların sebep olduğu olumsuz sonuçlara daha fazla maruz kalmalarından kaynaklanabilir.

Öğretmenlerinin tutumları, geri dönüşüm niyetlerini yordayan ikinci kuvvetli değişken olmuştur. Bu sonuç çeşitli çalışmalarla benzerlik gösterse de (örn. Boldero, 1995) bazı çalışmaların sonuçlarından ayrışmaktadır (örn. Philippsen, 2015). Hollanda'daki üniversite öğrencilerinin geri dönüşüm davranışlarını belirleyen faktörleri inceleyen Philippsen (2015), öğrencilerin geri dönüşüm tutumlarının, niyetlerinin açıklamadığını belirtmiştir. Ankete katılan kişi sayısının değişkenlerin yordama becerisini arttırdığı düşünüldüğünde (Field, 2013), araştırmacının 45 maddelik anketi

114 öğrenciye uygulamış olması bu sonucu doğurmuş olabilir. Ayrıca, güncel çalışmanın sonucu, Xu ve diğerlerinin (2017) Çin'deki hane halkının atık ayırma davranışlarını belirleyen etkenlerin araştırıldığı çalışmayla da uyuşmamaktadır. Bunun sebebi, tutum değişkeninin ahlaki normlar ve niyet değişkenleri arasında aracı değişken olarak kullanılmış olması olabilir. Dahası, Ajzen ve Fishbein'e (1980) göre genel davranışlar yerine özgül davranışlara odaklanılması değişkenlerin yordama becerilerini arttırdığı için, geri dönüşüm davranışı gibi özgül bir davranış yerine atık ayırma davranışına odaklanmış olmaları araştırma sonucunu etkilemiş olabilir.

Okul öncesi öğretmenlerinin öznel normları geri dönüşüm niyetlerini belirleyen en kuvvetli üçüncü değişkendir. Bu sonuç bazı çalışmalarla benzerlik gösterse de (örn. Chan, 1998), öznel normlar çoğunlukla tek madde ile ölçüldüğü için niyeti yordama becerisi genel olarak düşüktür (Armitage ve Conner, 2001). Bazı araştırmarda çok maddeli ölçek kullanılmasına rağmen, öznel normlar niyeti anlamlı şekilde yordamamıştır (örn. Philippsen). Bu noktada, katılımcılar geri dönüşüme aşina olmadıkları için dışarıdan bir baskı algılamamış olabilirler (örn. Philippsen, 2015). Boldero'nun (1995) Avustralya'daki üniversite öğrencilerinin geri dönüşüm davranışlarını belirleyen etkenleri incelediği çalışmasında, öğrencilerin öznel normları niyetlerini açıklayamamıştır. Avustralya gibi ‘‘bireyci’’ toplumlarda tutumların normlardan daha ön planda olması ve Türkiye gibi ‘‘toplulukçu’’ toplumlarda normların tutumlardan önce gelmesi araştırmaların sonuçlarındaki farklılığı açıklayabilir (Hofstede, 1994),. Bu sonuç, sosyal baskının davranışın oluştuğu süreçte belirleyici olmasından ve ergin toplumlarda bu değişkenin işlevsiz kalmasından da kaynaklanabilir (Hage ve diğerleri, 2008).

Okul öncesi öğretmenlerinin algıladıkları davranış kontrolü, geri dönüşüm niyetlerini etkileyen en kuvvetli değişkendir. Bu sonuç alanyazındaki çalışmalarla benzerken (örn. Taylor ve Todd, 1995); bazı çalışmalardan ayrışmaktadır (örn. Chan ve Tung, 2010). Tayvan'daki tüketicilerin geri dönüşüm davranışlarını belirleyen faktörleri

araştırdığı çalışmasında Chan ve Tung (2010) algılanan davranış kontrolünün niyeti yordamadığını bulmuştur. Chan ve Tung'un, çalışmalarında kontrol inançlarına yer vermemiş olmaları çalışma bulgularını etkilemiş olabilir. Bazı çalışmalar algılanan davranış kontrolünün geri dönüşüm davranışını doğrudan etkilediğini belirtmesine rağmen (örn. Chan ve Bishop, 2013), Avustralya'daki üniversite öğrencilerinin kağıt geri dönüştürme niyetini ve davrnaışı inceleyen Boldero (1995) algılanan davranış kontrolünün geri dönüşüm davranışını doğrudan açıklamadığını bulmuştur. Çalışmalarda tutum, öznel normlar ve algılanan davranış kontrolünün yordayıcılığı davranış türüne ve çalışmanın yapıldığı koşullara göre değiştiği için (Ajzen, 1991), araştırmacının çalışmasında kullandığı çok sayıdaki değişken algılanan davranış kontrolünün yordayıcılığını azaltmış olabilir.

Okul öncesi öğretmenlerin ahlaki normlarının niyetlerini ve davranışlarını açıklamaması alanyazındaki bazı çalışmalarla çelişmektedir (örn. Chan ve Bishop, 2013). Bu araştırmacılar, Avustralya'daki üniveriste öğrencileriyle yaptıkları çalışmalarında ahlaki normların geri dönüşüm niyerini yordadığını bulmuşlardır. Bu sonuç, araştırmacıların tutum değişkeninini araştırmadan çıkararak ahlaki norm değişkenini çalışmalarına dahil etmelerinden kaynaklanabilir. Ayrıca, çalışmalarında anavatanı belirtilmeyen öğrencilerle sosyal normların içselleştirilmiş hali olan ahlaki normları çalışmış olmaları bulguları etkilemiş olabilir. Dahası, bu sonuç güncel çalışmadaki okul öncesi öğretmenlerin geri dönüşüm niyetine veya davranışına yönelik bireysel bir sorumluluk hissetmemelerinden kaynaklanabilir (Poskus, 2015). Dahası, Yunan vatandaşlarının geri dönüşüm davranışlarını belirleyen etkenleri incelediği çalışmasında Botetzagias ve diğerleri (2015) ahlaki normların katılımcıların niyetlerini ve davranışlarını açıkladığını bulmuştur. Bu sonuç, araştırmacıların tutum değişkenini ahlaki norm ve niyet değişkenleri arasında aracı değişken olarak kullanmasından kaynaklanmış olabilir. Ayrıca, yaş ve cinsiyet değişkenlerin ahlaki normları etkilediğini buldukları çalışmalarında, katılımcılarının neredeyse yarısının erkek ve çoğu katılımcının 20-35 yaş aralığında olması; katılımcılarının neredeyse

hepsi kadın olan ve yarısı 35-49 yaş aralığında olan güncel çalışmayla bulgularının farklılıklarını açıklayabilir.

Bu çalışmada, elverişlilik değişkeninin okul öncesi öğretmenlerinin geri dönüşüm niyetlerini anlamlı düzeyde yordadığı bulunmuştur. Bu sonuç, alanyazındaki bazı çalışmalarla paralellik gösterirken (örn. Boldero, 1995) bazılarınınkiyle farklılık göstermektedir (örn. Gadiraju, 2016). Birleşik Devletler'deki üniversite öğrencilerinin geri dönüşüm davranışını belirleyen faktörleri incelediği çalışmasında Gadiraju (2016), elverişsizliğin geri dönüşüm niyetiyle olumsuz ve anlamlı olmayan bir ilişkisi olduğunu bulmuştur. Olumlu geri dönüşüm tutumu olan bireyler geri dönüşümü daha elverişli bulma eğiliminde olduklarından, çevre konularıyla ilgilenmeyen bireyler için geri dönüşümün kolay ve erişilebilir yapılması bireylerin geri dönüşüm davranışlarını arttırmaktadır (Derksen ve Gartrell, 1993). Yani, bireylerin geri dönüşümü kolay/zor görme derecesini gösteren algılanan davranış kontrolü ve elverişlilik bireyleri geri dönüşüm yapmaya itebilir. Bu bağlamda, Gadiraju'nun (2016) ve güncel çalışmanın bulguları algılanan davranış kontrolünün niyeti yordama derecesinden kaynaklanabilir. Ayrıca, bu çalışmada elverişliliğin öğretmenlerin geri dönüşüm davranışlarını açıklayamadığı bulunmuştur. Bu sonuç öğretmenlerin niyet ve davranışları arasındaki yüksek ilişkinin elverişlilik değişkeninin yordama gücünü düşürmesi olabilir.

Geçmiş davranış değişkeni niyet ve davranış değişkenleriyle yüksek ilişkisinden dolayı ayırdedici geçerliliği sağlamadığı için yapısal eşitlik modellemesi analizine dahil edilmemiştir (Farrell, 2010). İlgili alanyazına bakıldığında, Avustralya'daki hane halklarının geri dönüşüm davranışlarını belirleyen etkenlerin incelendiği çalışmada Terry ve diğerleri (1999) geçmiş davranış değişkeni tutum ve niyet arasındaki ilişkiyi ortalamış ve geri dönüşüm davranışını da yordamıştır. Çalışmalarında geçmiş davranış değişkenini üç aylık bir süre ile sınırlandıran ve 5'li Likert türünde olan tek maddeyle ölçen araştırmacılar, geri dönüştürülebilen farklı materyalleri bu maddede toplamıştır.

Sutton'a göre (1994), iki değişkenin birbiriyle ilişkisi zaman aralığının uzunluğu, değişkenlerin benzerliği ve örneklem özelliğinden etkilenmektedir. Ayrıca, bireylerin geçmiş deneyimleri eylemsel bellekte depolandığı ve bu bellek bireylerin cevabının doğruluğuyla ilgili problem yarattığı için (Verplanken ve Aarts, 2011), okul öncesi öğretmenlerinin son bir yıldaki davranışlarının sorulduğu bu çalışmanın sonuçları Terry ve diğerleri'ninkinden (1999) farklı bulunmuş olabilir. Dahası, bireyin davranışlarını göstermede öznel olan özbildirim ölçeklerinin kullanılması (Olson, 1981), 5'li Likert ölçekler cevapsıklığını arttırması ve 7'li Likert ölçeklere göre daha sınırlı bilgi sağlaması (Finstad, 2010), bulguların farklılığını açıklayabilir.

Alanyazındaki çoğu çalışma gibi, okul öncesi öğretmenlerinin davranış niyetleri, geri dönüşüm davranışlarının en kuvvetli belirleyicisi olarak bulunmuştur (örn. Chan, 1998; Chan ve Bishop, 2013; Chu ve Chiu, 2003). Örneğin, Hong Kong'daki hane halklarının geri dönüşüm davranışlarını belirleyen etkenleri araştırdığı çalışmasında Chan (1998), davranış niyetlerinin davranışın varyansını %14 açıkladığını bulmuştur. Bu oran güncel çalışmada %40'tır. Çin'deki hane halklarının davranış niyeti, Türkiye'deki okul öncesi öğretmenlerininkiyle kıyaslandığında Türkiye örnekleminin geri dönüşüm yapmaya daha meyilli oldukları görülmektedir. Bulguların farklılığı, öğretmenlerin eğitimci olarak hane halklarına göre daha yüksek tutum, öznel norm ve algılanan davranış kontrolüne sahip olmalarından ve geri dönüşümü elverişli bulmalarından kaynaklanabilir.

4.1. İleriki Çalışmalara Yönelik Öneriler

Bu çalışma, Ankara ilinin dokuz merkez ilçesindeki devlet okullarında çalışan 584 okul öncesi öğretmeninden veri toplanarak yapılmıştır. Çalışmanın sınırlılıkları dahilinde belirlenen önerilerden ilki örneklemle ilgilidir. Bu çalışmanın verileri Ankara'daki devlet okullarında çalışan okul öncesi öğretmenlerinden toplanmıştır. Bu bağlamda, çalışma sonuçlarının örneklem grubunu daha iyi temsil etmesi için özel

okulda çalışan okul öncesi öğretmenlerden de veri toplamak ileriki çalışmaları zenginleştirebilir. Ayrıca, katılımcıların kolay ulaşılabilir örneklem yerine herhangi bir rastgele örneklem yöntemiyle belirlenmesi, çalışma bulgularını daha genellenebilir kılabilir. Bunlara ek olarak, ölçme aracıyla ilgili olarak, günel çalışmada toplamda 81 maddelik ölçme araçları kullanılması katılımcıların dikkatini dağıtmış olabilir. Bu sebeple, ileriki çalışmalar katılımcılardan daha güvenilir cevaplar alabilmek için daha az sayıda madde içeren ölçme araçları kullanabilirler. Oskamp ve diğerlerine göre (1991), çeşitli geri dönüştürülebilir materyalleri birlikte incelemek yerine, bu materyallerden birine odaklanılması çalışmadaki hatayı azaltabilir. Bu sebeple, ileriki çalışmalarda sadece kağıt veya plastik geri dönüşümü gibi bir davranışa odaklanılabilir. Dahası, geçmiş geri dönüşüm davranışı bu çalışmadaki gibi son bir yıllık süreci kapsadığında, katılımcılar davranış sıklıklarını hatırlayamayabilir ve bu zaman aralığının uzunluğundan kaynaklı doğru cevaplar sağlayamayabilirler. Bu nedenle, alanyazındaki çalışmalar gibi son üç aydaki veya son bir aydaki geri dönüşüm davranışları geçmiş geri dönüşüm davranışı kapsamında ele alınabilir. Ek olarak, bu çalışmadaki gibi geçmiş davranışın sıklığını 1'den (asla) 7'ye (her zaman) olarak ifade etmek yerine, ileriki çalışmalarda bu değişken ''haftada en az bir kez'' veya ''haftada 10 kereden fazla'' gibi ifadeler kullanmak alınan cevapların doğruluğu arttırabilir. Son olarak, özbildirim ölçekleriyle tarafsız çevre dostu davranışların araştırıldığı çalışmalarda yüksek ilişki bulunsa da (Kormos ve Gifford, 2014), özbildirim ölçekleri ifadelerin öznelliği (Olson, 1981), katılımcıların abartmaya meyilliliği (Barr, 2007) ve beklenen cevabı verme eğitimi (Milfont, 2009) gibi dezavantajlarından dolayı ek gözlem tekniklerinin ileriki çalışmalarda kullanılması önerilmektedir.

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