UNIVERSIDADE DO ALGARVE

FACULDADE DE ECONOMIA

MODELING CONSUMER BEHAVIOR IN THE PORTUGUESE RECYCLING PROGRAM: THE LOGISTICS AND COMMUNICATION PLANNING IMPLICATIONS

– VOLUME II –

Tese para a obtenção do Grau de Doutor em
Métodos Quantitativos Aplicados à Economia e à Gestão na especialidade de Estatística

PATRÍCIA SUSANA LOPES GUERRILHA DOS SANTOS PINTO OOM DO VALLE

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MODELING CONSUMER BEHAVIOR IN THE PORTUGUESE RECYCLING PROGRAM: THE LOGISTICS AND COMMUNICATION PLANNING IMPLICATIONS

Volume II

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TABLE A.1
Summary of articles on reverse logistics for recycling

Reference	Main topics investigated	Material (in)	Material (out)	Sender	Driver(s)
Guiltinan and Nwokoye (1975)	Reverse logistics networks	Recyclables in general	Materials	Users	Social benefits Economic benefits
Pohlen and Farris (1992)	Reverse logistics networks Transportation issues	Plastics	(*)	Users	Environmental concerns
Bronstad and Evans-Correia (1992)	Purchase of recycled materials	Paper	Paper	Households Companies	(*)
Kopicki *et al.* (1993)	Logistic implications of recycling (and reuse) programs	Recyclables in general	Materials	Users	Social benefits Economic benefits
Gupta and Chakraborty (1994)	Planning and control of recovery activities	Glass scrap	Raw materials	Producer glass	Cost savings
Jahre (1995)	Reverse logistics networks	Household waste	Substitutes for primary materials	Households	Legislation
Faria de Almeida and Robertson (1995)	Incentives to stimulate recovery (timely and clear information)	Batteries	Materials	User batteries	(*)
Spengler *et al.* (1997)	Reverse logistics networks (private networks)	Steel products	Reusable products	Steel industry	Disposal cost saving Public waste management

(*) Not mentioned.

TABLE A.1 (Cont.)
Summary of articles on reverse logistics for recycling

Reference	Main topics investigated	Material (in)	Material (out)	Sender(s)	Driver(s)
Fuller and Allen (1997)	Reverse logistics networks	Post-consumer recyclables	Substitutes for primary materials	Final users	Legislation
Yender (1998)	Incentives to stimulate recovery (Easy and simple method of supply)	Batteries	Raw materials Batteries	Households Companies	(*)
Barros, Dekker and Scholten (1998)	Reverse logistics networks (public networks)	Construction waste	Sand	Waste processors	Waste disposal Environmental regulation
Nagel and Meyer (1999)	Information and communication for reverse logistics	End-of-use refrigerators	Plastics Metals	End-of-life users	No longer needed Legislations Costs savings
Lowers *et al.* (1999)	Reverse logistics networks (private networks)	Carpets	Fibres, etc.	Companies involved in floor covering Municipalities	Image Expected legislation Economic advantages
Realff *et al.* (2000)	Reverse logistics networks (private networks)	Carpets	Fibres	Customers Business	(*)
Chang and Wei (2000)	Reverse logistics networks (public networks)	Household waste	(*)	Households	Waste disposal Disposal cost saving Environmental concern

(*) Not mentioned.

TABLE A.2
Socio-demographic attributes as predictors of recycling behavior

Socio-demographic attribute	Reference	Variable under analysis	Participants	Finding (*)	Method
Gender	Webster (1975)	Participation in recycling	Customers of a refuse collection contractor	0	Discriminant analysis
	Vining and Ebreo (1990)	Self-reported recycling	Residential households	0	t-tests / Chi-square tests
	Hopper and Nielsen (1991)	Self-reported frequency of recycling	Residential households	0	Multiple regression
	Oskamp *et al.* (1991)	Self-reported recycling	Residential households	0	Multiple regression
	Gamba and Oskamp (1994)	Self-reported recycling	Residential households	0	Proportions and correlations
	Boldero (1995)	Audited recycling intentions and behavior	Residential households	0	Logistics / multiple regression
	Werner and Makela (1998)	Self-reported participation and frequency of recycling	Residential households	0	Proportions and correlations
Age	Webster (1975)	Participation in recycling	Customers of a refuse collection contractor	0	Discriminant analysis
	Vining and Ebreo (1990)	Self-reported recycling	Residential households	+	t-tests / Chi-square tests
	Oskamp *et al.* (1991)	Self-reported recycling	Residential households	0	Multiple regression
	Folz and Hazlett (1991)	Participation in recycling	Residential households	+	Correlations / Multiple regressions
	Gamba and Oskamp (1994)	Self-reported recycling	Residential households	+	Proportions and correlations
	Boldero (1995)	Audited recycling intentions and behavior	Residential households	0	Logistics / multiple regression
	Corral-Verdugo (1996)	Observed frequency of recycling	Residential households	0	Multiple regression / SEM
	Margai (1997)	Self-reported frequency of recycling and observed amount of collected materials	Residential households	+	ANOVA / t-tests
	Werner and Makela (1998)	Self-reported participation and frequency of recycling	Residential households	0	Proportions and correlations
	Scott (1999)	Self-reported frequency of recycling	Residential households	+	Multiple regression
	Guerin, Crete and Mercier (2001)	Self-reported recycling	Residential households in 15 countries of the European Union	+	Hierarchical linear regression

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.2 (Cont.)
Socio-demographic attributes as predictors of recycling behavior

Socio-demographic attribute	Reference	Variable under analysis	Participants	Finding (*)	Method
Education	Arbuthnot (1974)	Self-reported participation and frequency of recycling	Recyclers, college students and members of church groups	+	Correlations / Multiple regression
	Webster (1975)	Participation in recycling	Customers of a refuse collection contractor	+	Discriminant analysis
	Jacobs, Balley and Crews (1984)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Vining and Ebreo (1990)	Self-reported recycling	Residential households	0	t-tests / Chi-square tests
	Hopper and Nielsen (1991)	Self-reported frequency of recycling	Residential households	0	Multiple regression
	Folz and Hazlett (1991)	Participation in recycling	Residential households	+	Correlations / Multiple regressions
	Oskamp *et al.* (1991)	Self-reported recycling	Residential households	0	Multiple regression
	Gamba and Oskamp (1994)	Self-reported recycling	Residential households	0	Proportions and correlations
	Corral-Verdugo (1996)	Observed frequency of recycling	Residential households	0	Multiple regression / SEM
	Berger (1997)	Access and usage of recycling facilities	Residential households	+	Correlations / Multiple regressions
	Werner and Makela (1998)	Self-reported participation and frequency of recycling	Residential households	0	Proportions and correlations
	Owens, Dickerson and Macintosh (2000)	Observed recycling efficiency (**)	Residential households	+	Proportions
	Guerin, Crete and Mercier (2001)	Self-reported recycling	Residential households in 15 countries of the European Union	+	Hierarchical linear regression

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.
(**) The recycling efficiency for each household was computed "as weight of the recyclables divided by the total weight of recoverables and waste observed in their recycling and trash containers" (Owens, Dickerson and Macintosh, 2000: 641).

TABLE A.2 (Cont.)
Socio-demographic attributes as predictors of recycling behavior

Socio-demographic attribute	Reference	Variable under analysis	Participants	Finding (*)	Method
Family income	Webster (1975)	Participation in recycling	Customers of a refuse collection contractor	+	Discriminant analysis
	Jacobs, Balley and Crews (1984)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Vining and Ebreo (1990)	Self-reported recycling	Residential households	+	t-tests / Chi-square tests
	Oskamp *et al.* (1991)	Self-reported recycling	Residential households	+	Multiple regression
	Berger (1997)	Access and usage of recycling facilities	Residential households	+	Correlations / Multiple regressions
	Corral-Verdugo (1996)	Observed frequency of recycling	Residential households	0	Multiple regression / SEM
	Owens, Dickerson and Macintosh (2000)	Recycling efficiency (**)	Residential households	+	Proportions
	Guerin, Crete and Mercier (2001)	Self-reported recycling	Residential households in 15 countries of the European Union	+	Hierarchical linear regression
Race	Folz and Hazlett (1991)	Participation in recycling	Residential households	Whites	Correlations / Multiple regressions
	Howenstine (1993)	Self-reported recycling	College students	Whites	PCA / t-tests
Liberal political orientation	Oskamp *et al.* (1991)	Self-reported recycling	Residential households	0	Multiple regression
Presence of children in household	Oskamp *et al.* (1991)	Self-reported recycling	Residential households	0	Multiple regression
Single family living	Oskamp *et al.* (1991)	Self-reported recycling	Residential households	+	Multiple regression
Home ownership	Oskamp *et al.* (1991)	Self-reported recycling	Residential households	+	Multiple regression
Household size	Vining and Ebreo (1990)	Self-reported recycling	Residential households	+	t-tests / Chi-square tests
	Margai (1997)	Self-reported frequency of recycling and observed amount of collected materials	Residential households	+	ANOVA / t-tests
Number of cars owned	Webster (1975)	Participation in recycling	Customers of a refuse collection contractor	0	Discriminant analysis
Apartment	Berger (1997)	Access and usage of recycling facilities	Residential households	+	Correlations / Multiple regressions
Size of the residence area	Berger (1997)	Access and usage of recycling facilities	Residential households	+	Correlations / Multiple regressions

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.3
Personal psychological values as predictors of recycling behavior

Values	Reference	Variable under analysis	Participants	Finding (*)	Method
Social conscience / Social responsibility / Collectivism orientation	Arbuthnot (1974)	Self-reported participation and frequency of recycling	Recyclers, college students and members of church groups	0	Correlations / Multiple regression
	Webster (1975)	Participation in recycling	Customers of a refuse collection contractor	+	Discriminant analysis
	Simmons and Widmar (1990)	Self-reported frequency of recycling	Residential households	+	t-tests
	Oskamp *et al.* (1991)	Self-reported recycling	Residential households	+	Multiple regression
	McCarty and Shrum (1994)	Attitude (societal importance of recycling)	Residential households	0	SEM
	McCarty and Shrum (1994)	Attitude (personal inconvenience of recycling)	Residential households	-	SEM
	McCarty and Shrum (2001)	Attitude (importance of recycling)	Residential households	+	SEM
Individualism	McCarty and Shrum (2001)	Attitude (inconvenience of recycling)	Residential households	+	SEM
Tolerance	Webster (1975)	Participation in recycling	Customers of a refuse collection contractor	+	Discriminant analysis
Dominance	Webster (1975)	Participation in recycling	Customers of a refuse collection contractor	0	Discriminant analysis
Socialization	Webster (1975)	Participation in recycling	Customers of a refuse collection contractor	0	Discriminant analysis
Security	McCarty and Shrum (1994)	Self-reported frequency of recycling	Residential households	0 (indirectly)	SEM
Economic prosperity / comfort	Arbuthnot (1974)	Self-reported participation and frequency of recycling	Recyclers, college students and members of church groups	-	Correlations / Multiple regression
	De Young (1986)	Self-reported recycling	Residential households	-	Correlations / t-tests/ ANOVA
	McCarty and Shrum (2001)	Attitude (inconvenience of recycling)	Residential households	- (indirectly)	SEM

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.4
General environmental attitudes as predictors of recycling behavior

Reference	Variable under analysis	Participants	Finding (*)	Method
Vining and Ebreo (1990)	Self-reported recycling	Residential households	0	t-tests / Chi-square tests
Oskamp *et al.* (1991)	Self-reported recycling	Residential households	0	Multiple regression
Vining and Ebreo (1992)	Self-reported recycling	Residential households	0	MANOVA / Multiple regression
Gamba and Oskamp (1994)	Self-reported recycling	Residential households	0	Proportions and correlations
Scott (1999)	Self-reported frequency of recycling	Residential households	0 / +	Multiple regression
Guerin, Crete and Mercier (2001)	Self-reported recycling	Residential households in 15 countries of the European Union	+	Hierarchical linear regression

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.5
Specific attitudes towards recycling as predictors of recycling behavior

Specific attitude towards recycling	Reference	Variable under analysis	Participants	Finding (*)	Method
Awareness of recycling benefits	Simmons and Widmar (1990)	Self-reported frequency of recycling	Residential households	+	t-tests
	Vining and Ebreo (1990)	Self-reported recycling	Residential households	+	t-tests / Chi-square tests
	Hopper and Nielsen (1991)	Self-reported frequency of recycling	Residential households	+	Multiple regression
	Vining and Ebreo (1992)	Self-reported recycling	Residential households	+	MANOVA / Multiple regression
	Gamba and Oskamp (1994)	Self-reported recycling	Residential households	+	Proportions and correlations
	McCarty and Shrum (1994)	Self-reported frequency of recycling	Residential households	+	SEM
	Guagnano, Stern and Dietz (1995)	Self-reported recycling	Residential households	0	Multiple regression
	Taylor and Todd (1995a)	Self reported recycling intentions	Residential households	+	SEM
	Taylor and Todd (1995b)	Self reported recycling intentions and behavior	Residential households	+	SEM
	Boldero (1995)	Audited recycling intentions and behavior	Residential households	0	Logistics / multiple regression
	Werner and Makela (1998)	Self-reported participation and frequency of recycling	Residential households	+	Proportions and correlations
	Bratt (1999)	Self-reported participation in recycling	Residential households	0 (directly and indirectly)	SEM
	Cheung, Chan and Wong (1999)	Mean of items measuring self-reported recycling intentions and behavior	College students	+	Multiple regression
	Scott (1999)	Self-reported frequency of recycling	Residential households	0	Multiple regression
	McCarty and Shrum (2001)	Self-reported frequency of recycling	Residential households	+	SEM

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.5 (Cont.)
Specific attitudes towards recycling as predictors of recycling behavior

Specific attitude towards recycling	Reference	Variable under analysis	Participants	Finding (*)	Method
Personal norms	Hopper and Nielsen (1991)	Self-reported frequency of recycling	Residential households	0 / +	Multiple regression
	Oskamp *et al.* (1991)	Self-reported recycling	Residential households	+	Multiple regression
	Vining and Ebreo (1992)	Self-reported recycling	Residential households	0 / +	MANOVA / Multiple regression
	Bratt (1999)	Self-reported participation in recycling	Residential households	+	SEM
	Schultz (1999)	Frequency of recycling and amount of collected material	Residential households	+	Comparison of treatments effects
Subjective norms	Nielsen and Ellington (1983)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Hopper and Nielsen (1991)	Self-reported frequency of recycling	Residential households	+	Multiple regression
	Vining and Ebreo (1992)	Self-reported recycling	Residential households	+	MANOVA / Multiple regression
	Pelton *et al.* (1993)	Willingness to participate in a recycling program	Residential households	+	SEM
	Boldero (1995)	Audited recycling intentions and behavior	Residential households	0	Logistics / multiple regression
	Taylor and Todd (1995a)	Self reported recycling intentions	Residential households	-	SEM
	Taylor and Todd (1995b)	Self reported recycling intentions and behavior	Residential households	+	SEM
	Schultz (1999)	Frequency of recycling and amount of collected material	Residential households	+	Comparison of treatments effects
	Scott (1999)	Self-reported frequency of recycling	Residential households	-	Multiple regression
	Bratt (1999)	Self-reported participation in recycling	Residential households	+	SEM
	Tucker (1999)	Observed recycling participation and weight of collected recyclables	Residential households	+	Comparison of treatments effects
	Cheung, Chan and Wong (1999)	Mean of items measuring self-reported recycling intentions and behavior	College students	+	Multiple regression

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.5 (Cont.)
Specific attitudes towards recycling as predictors of recycling behavior

Specific attitude towards recycling	Reference	Variable under analysis	Participants	Finding (*)	Method
Ascription of responsibility	Vining and Ebreo (1992)	Self-reported recycling	Residential households	0	MANOVA / Multiple regression
	Guagnano, Stern and Dietz (1995)	Self-reported recycling	Residential households	+	Multiple regression
Perceived behavior control / Reduced perceived difficulty	Boldero (1995)	Audited recycling intentions and behavior	Residential households	0	Logistics / Multiple regression
	Taylor and Todd (1995a)	Self reported recycling intentions	Residential households	+	SEM
	Taylor and Todd (1995b)	Self reported recycling intentions and behavior	Residential households	+	SEM
	Cheung, Chan and Wong (1999)	Mean of items measuring self-reported recycling intentions and behavior	College students	+	Multiple regression
	McCarty and Shrum (2001)	Self-reported frequency of recycling	Residential households	+	SEM
Intrinsic satisfaction (self-gratification)	McCarty and Shrum (1994)	Attitude (societal importance of recycling)	Residential households	-	SEM
	McCarty and Shrum (1994)	Attitude (personal inconvenience of recycling)	Residential households	0	SEM
Intrinsic satisfaction (fun / enjoyment)	McCarty and Shrum (1994)	Attitude (societal importance of recycling)	Residential households	+	SEM
	McCarty and Shrum (1994)	Attitude (personal inconvenience of recycling)	Residential households	0	
Perceived complexity	Taylor and Todd (1995a)	Attitude toward recycling	Residential households	-	SEM
	Taylor and Todd (1995b)	Attitude toward recycling	Residential households	+	SEM
Indifference	Howenstine (1993)	Self-reported recycling	College students	-	PCA / t-tests
Inconvenience	Vining and Ebreo (1990)	Self-reported recycling	Residential households	-	t-tests / Chi-square tests
	Howenstine (1993)	Self-reported recycling	College students	-	PCA / t-tests
	McCarty and Shrum (1994)	Self-reported frequency of recycling	Residential households	-	SEM
	Boldero (1995)	Audited recycling intentions	Residential households	0	Multiple regression
	Boldero (1995)	Audited recycling behavior	Residential households	-	Logistics regression
	Guagnano, Stern and Dietz (1995)	Self-reported recycling	Residential households	0	Multiple regression
	McCarty and Shrum (2001)	Self-reported frequency of recycling	Residential households	-	SEM

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.6
Knowledge as predictor of recycling behavior

Type of knowledge	Reference	Variable under analysis	Participants	Finding (*)	Method
Knowledge about Environmental issues	Arbuthnot (1974)	Self-reported participation and frequency of recycling	Recyclers, college students and members of church groups	-	Correlations / Multiple regression
	Oskamp *et al.* (1991)	Self-reported recycling	Residential households	+	Multiple regression
	Cheung, Chan and Wong (1999)	Mean of items measuring self-reported recycling intentions	College students	+	Multiple regression
	Cheung, Chan and Wong (1999)	Mean of items measuring self-reported recycling behavior	College students	0	Multiple regression
Specific knowledge about recycling	Vining and Ebreo (1990)	Self-reported recycling	Residential households	+	t-tests / Chi-square tests
	Simmons and Widmar (1991)	Self-reported frequency of recycling	Residential households	+	t-tests
	Gamba and Oskamp (1994)	Self-reported recycling	Residential households	+	Proportions and correlations
	Thogersen (1994)	Self -reported and observed recycling	Residential households	+	Comparison of recycling programs
	Taylor and Todd (1995a)	Self -reported recycling intentions	Residential households	+	SEM
	Corral-Verdugo (1996)	Observed frequency of recycling	Residential households	0 (directly)	Multiple regression
	Corral-Verdugo (1996)	Observed frequency of recycling	Residential households	+ (indirectly)	SEM
	Corral-Verdugo (1996)	Competencies for recycling	Residential households	+	SEM
	Corral-Verdugo (1997)	Observed frequency of recycling	Residential households	+	SEM
	Corral-Verdugo (1997)	Self-reported recycling	Residential households	0	SEM
	Nyamwange (1996)	Self-reported frequency of recycling	Residential households	+	Proportions

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.7
Consumer-service dimensions as predictors of recycling behavior

Consumer-service dimensions	Reference	Variable under analysis	Participants	Finding (*)	Method
Proximity of disposal containers	Reid *et al.* (1976)	Amount of collected materials	Apartment residents	+	Comparison of treatments effects
	Witmer and Geller (1976)	Amount of collected materials	College students	+	Comparison of treatments effects
	Humphrey *et al.* (1977)	Racio of recycled material to discarded material	Office workers	+	Proportions
	Luyben and Bailey (1979)	Amount of collected material	Mobile home residents	+	Comparison of treatments effects
	De Young (1990)	Self-reported recycling	Households from communities with recycling education programs	+	Means and proportions
	Folz (1991)	Participation in recycling	Residential households	+	Correlations / Multiple regressions
	Folz and Hazlett (1991)	Participation in recycling	Residential households	+	Correlations / Multiple regressions
	Vining and Ebreo (1992)	Self-reported recycling	Residential households	+	MANOVA / Multiple regression
	Pelton *et al.* (1993)	Willingness to participate in a recycling program	Residential households	+	SEM
	Margai (1997)	Self-reported frequency of recycling and observed amount of collected materials	Residential households	+	ANOVA / t-tests
	Ludwig, Gray and Rowell (1998)	Participation in recycling	College students	+	Comparison of treatments effects
Minimal complexity in separating and storing	Gamba and Oskamp (1994)	Self-reported recycling	Residential households	+	Proportions and correlations
Reliable frequency of collection	Jacobs, Bailey and Crews (1984)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Foshay and Aitchison (1991)	Amount of collected material	Residential households	+	Proportions
	Folz (1991)	Participation in recycling	Residential households	0	Correlations / Multiple regressions
	O'Connor (1993)	Amount of collected material	Residential households	+	Comparison of recycling programs

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.7 (Cont.)
Consumer-service dimensions as predictors of recycling behavior

Consumer-service dimensions	Reference	Variable under analysis	Participants	Finding (*)	Method
Availability of information about what to recycle and where	Reid *et al.* (1976)	Amount of collected materials	Apartment residents	+	Comparison of treatments effects
	Arbuthnot *et al.* (1976-77)	Self-reported recycling	Residential households	+	Comparison of treatments effects
	Luyben and Cummings (1981-82)	Amount of collected material	College students	+	Comparison of treatments effects
	Jacobs, Balley and Crews (1984)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Burn and Oskamp (1986)	Participation in recycling	Residential households	+	Comparison of treatments effects
	De Young (1989)	Self-reported recycling	Residential households	+	Correlations / t-tests / ANOVA
	De Young (1990)	Self-reported recycling	Households from communities with recycling education programs	+	Comparison of recycling programs
	Diamond and Loewy (1991)	Observed participation in recycling	College students	+	Comparison of treatments effects
	Hopper and Nielsen (1991)	Self-reported frequency of recycling	Residential households	+	Multiple regression
	Folz (1991)	Participation in recycling	Residential households	0	Correlations / Multiple regressions
	Folz and Hazlett (1991)	Participation in recycling	Residential households	0	Correlations / Multiple regressions
	Austin *et al.* (1993)	Amount of collected material	College students	+	Comparison of treatments effects
	Thogersen (1994)	Self -reported and observed recycling	Residential households	+	Comparison of recycling programs
	Nyamwange (1996)	Self-reported frequency of recycling	Residential households	+	Proportions
	Leroux (2000)	Rate of waste reduction	Residential households	+	Comparison of recycling programs
Distribution of free bins for recyclabes	Jacobs, Bailey and Crews (1984)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Foshay and Aitchison (1991)	Amount of collected material	Residential households	+	Proportions
	Folz (1991)	Participation in recycling	Residential households	+	Correlations / Multiple regressions
	0'Connor (1993)	Amount of collected material	Residential households	+	Comparison of recycling programs
	Guagnano, Stern and Dietz (1995)	Self-reported recycling	Residential households	+	Multiple regression

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.8
Intervention forms as predictors of recycling behavior

Types of intervention strategy	Reference	Variable under analysis	Participants	Finding (*)	Method
Rewards	Geller, Chaffee and Ingram (1975)	Amount of collected materials	College students	+	Comparison of treatments effects
	Witmer and Geller (1976)	Amount of collected materials	College students	+	Comparison of treatments effects
	Luyben and Cummings (1981-82)	Amount of collected material	College students	+	Comparison of treatments effects
	Jacobs and Bailey (1982-83)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Katzev and Pardini (1987-88)	Participation and amount of collected materials	Residential households	+	Comparison of treatments effects
	Diamond and Loewy (1991)	Observed participation in recycling	College students	+	Comparison of treatments effects
	Vining and Ebreo (1990)	Self-reported recycling	Residential households	+	t-tests / Chi-square tests
	Wang and Katzev (1990)	Amount of collected material	Retirement center residents	+	Comparison of treatments effects
	Pelton *et al.* (1993)	Willingness to participate in a recycling program	Residential households	+	SEM
Punishments	Folz (1991)	Participation in recycling	Residential households	+	Correlations / Multiple regressions
	Pelton *et al.* (1993)	Willingness to participate in a recycling program	Residential households	+	SEM
	Nyamwange (1996)	Self-reported frequency of recycling	Residential households	+	Proportions
Public education programs	Folz (1991)	Participation in recycling	Residential households	+	Correlations / Multiple regressions
	Goldenhar and Connell (1991-92)	Self-reported recycling	College students	+	Comparison of treatments effects

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.8 (Cont.)
Intervention forms as predictors of recycling behavior

Types of intervention strategy	Reference	Variable under analysis	Participants	Finding (*)	Method
Communication	Jacobs, Bailey and Crews (1984)	Participation in recycling	Residential households	+	Comparison of treatments effects
(Persuasion)	Goldenhar and Connell (1991-92)	Self-reported recycling	College students	+	Comparison of treatments effects
	Krendl, Olson and Burke (1992)			+	Comparison of treatments effects
	Lord (1994)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Werner *et al.* (1995)	Participation in recycling	Residential households	+	Comparison of treatments effects
Prompting	Reid *et al.* (1976)	Amount of collected materials	Apartment residents	+	Comparison of treatments effects
	Witmer and Geller (1976)	Amount of collected materials	College students	0	
	Luyben and Cummings (1981-82)	Amount of collected material	College students	+	Comparison of treatments effects
	Jacobs, Bailey and Crews (1984)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Burn and Oskamp (1986)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Spaccarelli, Zolik and Jason (1989-90)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Burn (1991)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Hopper and Nielsen (1991)	Self-reported frequency of recycling	Residential households	+	Multiple regression
	Austin *et al.* (1993)	Amount of collected materials	College students	+	Comparison of treatments effects
Social pressure	Burn (1991)	Participation in recycling	Residential households	+	Comparison of treatments effects
(Block leaders)	Nielsen and Ellington (1983)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Hopper and Nielsen (1991)	Self-reported frequency of recycling	Residential households	+	Multiple regression
	Oskamp *et al.* (1991)	Self-reported recycling	Residential households	0	Multiple regression

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.8 (Cont.)
Intervention forms as predictors of recycling behavior

Types of intervention strategy	Reference	Variable under analysis	Participants	Finding (*)	Method
Commitment	Arbuthnot *et al.* (1976-77)	Self-reported recycling	Residential households	+	Comparison of treatments effects
	Pardini and Katzev (1983-84)	Participation and amount of collected materials	Residential households	+	Comparison of treatments effects
	Burn and Oskamp (1986)	Participation in recycling	Residential households	+	Comparison of treatments effects
	Katzev and Pardini (1987-88)	Participation and amount of collected materials	Residential households	+	Comparison of treatments effects
	Wang and Katzev (1990)	Amount of collected material	Retirement center residents	+	Comparison of treatments effects
	DeLeon and Fuqua (1995)	Amount of collected material	Residential households	+	Comparison of treatments effects
	De Young *et al.* (1995)	Amount and quality of collected materials	Apartment complex residents	0	Comparison of treatments effects
	Werner *et al.* (1995)	Participation in recycling	Residential households	+	Comparison of treatments effects
Goal setting	Hamad *et al.* (1980-81)	Amount of collected material	Elementary school students	+	Comparison of treatments effects
	McCaul and Kopp (1982)	Amount of collected material	College students	+	Comparison of treatments effects
	Folz and Hazlett (1991)	Participation in recycling	Residential households	+	Correlations / Multiple regressions
	Keller (1991)	Participation in recycling	Residential households	+	Proportions
	Needleman and Geller (1992)	Amount of collected materials	Office workers	+	Comparison of treatments effects
Feedback	DeLeon and Fuqua (1995)	Amount of collected material	Residential households	+	Comparison of treatments effects
	Hamad *et al.* (1980-81)	Amount of collected material	Elementary school students	+	Comparison of treatments effects
	McCaul and Kopp (1982)	Amount of collected material	College students	+	Correlations / Multiple regressions
	Needleman and Geller (1992)	Amount of collected materials	Office workers	+	Comparison of treatments effects
	Larson, Houlihan and Goernet (1995)	Amount of collected materials	College students	+	Proportions
	De Young *et al.* (1995)	Amount and quality of collected materials	Apartment complex residents	0	Comparison of treatments effects
	Schultz (1999)	Frequency of recycling and amount of collected material	Residential households	+	Comparison of treatments effects

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.9
Chronology of studies utilizing multivariate statistics that only assessed personal independent variables

Reference	Method	Participants	Independent variables (hypothesized / finding) (*)	Mediators (hypothesized / finding)	Dependent variable
Arbuthnot (1974)	Multiple regression	Recyclers, college students and members of church groups	Education (+ / +) Environmental knowledge (+ / +) Economic orientation (- / -)		Self-reported participation and frequency of recycling
Webster (1975)	Discriminant analysis	Customers of a refuse collection contractor	Social conscious (+ / +) Perceived consumer effectiveness (+ / +) Perceived power of big business (+ / 0) Dominance (+ / 0) Tolerance (+ / +) Socialization (+ / 0) Responsibility (+ / +) Community activities (+ / 0) Church going (+ / 0) Age (0 / 0) Gender (0 / 0) Education (+ / +) Number of cars owned (0 / 0) Income (0 / +)		Participation in recycling
Oskamp *et al.* (1991)	Multiple regression	Residential households	Pro-ecological attitudes (+ / 0) Environmental consciousness (+ / 0) Intrinsic motives (+ / +) Efficacy (+ / 0) Attitude toward recycling effectiveness (+ / 0) Liberal political orientation (+ / 0) Pro-governmental involvement (+ / 0) Knowledge about conservation (+ / +) Other environmental behaviors (+ / 0) Past recycling for cash (+ / 0)		Self-reported recycling
Vining and Ebreo (1992)	Multiple regression	Residential households	General environmental attitudes [Balance of nature (0 / 0); limits of growth (0 / 0); humanity over nature (0 / 0)] Specific attitudes towards recycling [Personal norm (0 / 0); social norm (0 / +); awareness of consequences (+ / +); ascription of responsibility (+ / 0); personal norm × awareness of consequences;(+ / +); personal norm × ascription of responsibility (+ / 0)]		Self-reported recycling

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.9 (Cont.)
Chronology of studies utilizing multivariate statistics that only assessed personal independent variables

Reference	Method	Participants	Independent variables (hypothesized / finding) (*)	Mediators (hypothesized / finding)	Dependent variable
McCarty and Shrum (1994)	SEM	Residential households	Collectivism (+ / 0) Self-gratification (+ / -) Fun / Enjoyment (+ / +) Security (+ / 0)	Attitude (Societal importance of recycling) (+ / 0)	Self-reported frequency of recycling
			Collectivism (+ / -) Self-gratification (+ / 0) Fun / Enjoyment (+ / 0) Security (+ / 0)	Attitude (Personal inconvenience of recycling) (- / -)	
Berger (1997)	Multiple regression 1	Residential households	Education (+ / +) Income (+ / +) Size of the area (+ / +) Apartment (+ / +)		Recycling usage Access to recycling
Bratt (1999)	SEM	Residential households	Experienced social norm (+ / +) (also hypothesized to have a non significant direct effect on behavior)(0/+) Assumed consequences (0 / 0) (also hypothesized to have a non significant direct effect on behavior)(0/0)	Personal norm (+ / +)	Self-reported participation in recycling
Cheung, Chan and Wong (1999)	Multiple regression 1	College students	Attitude toward the act (+ / +) Perceived normative pressure (+ / +) Perceived behavior control (+ / +) General environmental knowledge (+ / +) Specific knowledge about recycling(+ / 0) Past behavior (+ / +)		Self-reported recycling intentions
	Multiple regression 2		Behavioral intention (+ / +) Perceived behavior control (+ / 0) General environmental knowledge (+ / 0) Specific knowledge about recycling (+ / +) Past behavior (+ / +)		Self-reported recycling behavior

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.9 (Cont.)
Chronology of studies utilizing multivariate statistics that only assessed personal independent variables

Reference	Method	Participants	Independent variables (hypothesized / finding) (*)	Mediators (hypothesized / finding)	Dependent variable
Scott (1999)	Multiple regression	Residential households	Demographics [age (+ / +)] Primary motivation [social norms [(- / -)] Program knowledge (+ / 0) Attitudes towards waste management issues (+/0) Other waste diversion practices [diversion score (+ / +); proud of environmentally responsible actions (+ / -)] Environmental attitudes [score on the dominant social paradigm (- / -)]		Self-reported frequency of recycling
McCarty and Shrum (2001)	SEM	Residential households	Collectivism (+ / +) Locus of control (+ / +) Economic status (- / -) Individualism (+ / +) Importance of recycling (+ / +)	Attitude (Importance of recycling) (+ / 0) Attitude (Inconvenience of recycling) (- / -)	Self-reported frequency of recycling

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.10
Chronology of studies utilizing multivariate statistics that only assessed situational independent variables

Reference	Method	Participants	Independent variables (hypothesized / finding) (*)	Mediators (hypothesized / finding)	Dependent variable
Folz (1991)	Multiple regression	Residential households	Program type (mandatory versus voluntary) (+ / +) Importance of citizen participation as a problem (+ / +) Sanctions / reminders (+ / +) Curbside collection by private contractor (+ / +) Official public recognition of recycling efforts by local groups (+ / +) Provision of free bins (+ / +) Curbside collection policy (+ / +) Composting program (+ / +)		Participation in recycling
Folz and Hazlett (1991)	Multiple regression	Residential households	Curbside collection provided (+ / +) Technical assistance from agencies in program design (+ / +) Recycling goal established (+ / +) Importance of local staff in designing the recycling program (+ / +) Private contractor collects recyclables (+/+) Composting program (+ / +) Neighborhood or community information meetings used to publicize the recycling program (+ / +)		Participation in recycling

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.11
Chronology of studies utilizing multivariate statistics that assessed both personal and situational independent variables

Reference	Method	Participants	Independent variables (hypothesized / finding) (*)	Mediators (hypothesized / finding)	Dependent variable
Hopper and Nielsen (1991)	Multiple regression1	Residential households	Block leader intervention (+ / +) Prompts (+ / +) Program information (+ / +)		Self-reported frequency of recycling
	Multiple regression2		Social norms (+ / +) Personal norms (+ / + for participants with high awareness of recycling consequences; 0 for participants with low awareness of recycling consequences)		Self-reported frequency of recycling
Pelton *et al.* (1993)	SEM (Confirmatory factorial analysis)	Residential households	Rewards (+ / +) Punishments (+ / +) Subjective norms (+ / +) Opportunity (+ / +)		Willingness to participate in a recycling program
Boldero (1995)	Multiple regression	Residential households	Gender (female / p) Age (+ / 0) Household type (+ / 0) Past behavior (+ / 0) Benefits of recycling (+ / 0) Inconvenience (- / -) Lack of conviction (- / -) Subjective norm (+ / 0) Insufficient newspapers (- / -) Storage space (+ / -) Evaluation of curbside service (+ / +) Perceived control		Recycling intention

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.11 (Cont.)
Chronology of studies utilizing multivariate statistics that assessed both personal and situational independent variables

Reference	Method	Participants	Independent variables (hypothesized / finding) (*)	Mediators (hypothesized / finding)	Dependent variable
Boldero (1995)	Logistic regression	Residential households	Gender (female / p) Age (+ / 0) Household type (+ / 0) Past behavior (+ / +) Benefits of recycling (+ / 0) Inconvenience (- / 0) Lack of conviction (- / 0) Subjective norm (+ / 0) Insufficient newspapers (- / 0) Storage space (+ / -) Evaluation of curbside service (+ / +) Perceived control (+ / 0) Recycling intention (+ / +)		Recycling behavior (Audited by student relatives)
Taylor and Todd (1995a)	SEM	Residential households	Relative advantage (+ / +) Perceived task complexity (- / -) Internal normative beliefs (+ / +) External normative beliefs (+ / +) Self-efficacy (+ / +) Compatibility (+ / 0) Resource-facilitating conditions (+ / +)	Attitude toward the act of recycling (+ / +) Subjective norms (+ / -) Perceived behavior control (+ / +)	Self reported recycling intentions
Taylor and Todd (1995b)	SEM	Residential households	Personal relative advantage (+ / 0) Societal relative advantage (+ / +) Perceived task complexity (- / +) Internal normative beliefs (+ / +) External normative beliefs (+ / +) Self-efficacy (+ / +) Resource-facilitating conditions (+ / -)	Attitude toward the act of recycling (+ / +) Subjective norms (+ /+) Perceived behavior control (+ / +) (also hypothesized to have a positive direct effect on behavior) (+ / +)	Self reported recycling intentions (+ / +) Self reported recycling behavior (+ / +)
Guagnano, Stern and Dietz (1995)	Multiple regression	Residential households	Having a free bin for recyclables (+ / +) Awareness of consequences of recycling (+ / 0) Awareness of personal costs (+ / 0) Ascription of recycling responsibility (+ / +) Bin × Ascription of responsibility (+ / -)		Self-reported recycling

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.11 (Cont.)
Chronology of studies utilizing multivariate statistics that assessed both personal and situational independent variables

Reference	Method	Participants	Independent variables (hypothesized / finding) (*)	Mediators (hypothesized / finding)	Dependent variable
Corral-Verdugo (1996)	Multiple regression	Residential households	Motives to recycling (+ / +) Competencies for recycling (+ / 0) Conservation beliefs (+ / 0) Storage facilities in home (+ / 0) Knowledge of recyclables (+ / 0) Recycling services (+ / 0) Age (+ / 0) Educational level (+ / 0) Family income (+ / 0) Use of TV / Radio (+ / 0) Reading books / newspapers (+ / 0)		Observed frequency of recycling (Audited within participants' homes)
	SEM		Competencies for recycling (+ / +) (also hypothesized to have a positive direct effect on recycling behavior) (+ / +) Conservation beliefs (+ / 0) (also hypothesized to have a positive direct effect on recycling behavior) (+ / 0) Storage facilities in home (+ / -) Existence of recycling collectors (+ / 0) (these last two variables were hypothesized to have a direct effect on recycling behavior)	Motives to recycling (+ / +)	Observed frequency of recycling (Audited within participants' homes)
Corral-Verdugo (1997)	SEM	Residential households	Competencies for recycling (+ / +) (also hypothesized to have a positive direct effect on reported behavior) (+ / 0) Motives to recycling (+ / +) (also hypothesized to have a positive direct effect on reported behavior) (+ / 0) Conservation beliefs (+ / 0) (also hypothesized to have a positive direct effect on reported behavior) (+ / +)	Observed frequency of recycling (+ / 0)	Self-reported recycling

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

TABLE A.11 (Cont.)
Chronology of studies utilizing multivariate statistics that assessed both personal and situational independent variables

Reference	Method	Participants	Independent variables (hypothesized / finding) (*)	Mediators (hypothesized / finding)	Dependent variable
Guerin, Crete and Mercier (2001)	Hierarchical linear regression 1	Residential households in 15 countries of the European Union	Individual global concern (+ / +) Ideology (+ / 0) (Trust in) Public bodies (+ / +) Local activism (+ / +) Member of an association (+ / +) Education (+ / +) Income (+ / +)		Self-reported recycling
	Hierarchical linear regression 2		Waste legislation and policy (+ / +) Percentage of membership (+ / +) Collective action (+ / 0) Deforestation (+ / 0)		

(*) Legend: "+": significant positive relationship; "-": significant negative relationship; "0": non-significant relationship.

Appendix B

ADDITIONAL ELEMENTS FROM THE APPLICATION OF PRINCIPAL COMPONENTS ANALYSIS

TABLE B.1
Correlation matrix between each pair of original items measuring general environmental attitudes

Items	1	2	3	4	5	6	7	8	9	10	11	12	13
1 – Humans are severely abusing the environment	1	0.332	0.323	0.334	0.285	0.263	0.020*	-0.013*	-0.032*	0.147	0.247	-0.095	-0.115
2 – To maintain a healthy economy, we will have to develop a "steady-state" economy where industrial growth is controlled	0.332	1	0.259	0.237	0.174	0.254	-0.010*	-0.027*	0.023*	0.077	0.175	0.015*	-0.046*
3 – The balance of nature is very delicate and easily upset	0.323	0.259	1	0.252	0.280	0.348	0.063	0.013*	0.057	0.173	0.310	0.006*	-0.026*
4 – People must live in harmony with nature to survive	0.334	0.237	0.252	1	0.310	0.195	-0.064	-0.084	-0.107	0.094	0.232	-0.084	-0.092
5 – When people interfere with nature, it often produces disastrous consequences	0.285	0.174	0.280	0.310	1	0.189	0.114	0.033*	0.055	0.179	0.198	-0.017*	-0.090
6 – There are limits to growth beyond which our industrialized society cannot expand	0.263	0.254	0.348	0.195	0.189	1	0.063	0.031*	0.065	0.197	0.219	-0.030*	-0.010*
7 – I feel incapable to act in the environmental problems resolution attempt	0.020	-0.010	0.063	-0.064	0.114	0.063	1	0.486	0.387	0.139	0.058	0.123	0.068
8 – I don't have a complete knowledge to act consciously in the environmental problems resolution	-0.013	-0.027	0.013	-0.084	0.033	0.031	0.486	1	0.276	0.076	0.026*	0.097	0.084
9 – The environment deterioration will proceed and only afterwards something can be done	-0.032	0.023	0.057	-0.107	0.055	0.065	0.387	0.276	1	0.156	0.035*	0.193	0.145
10 – We are approaching the limit of the number of people the earth can support	0.147	0.077	0.173	0.094	0.179	0.197	0.139	0.076	0.156	1	0.179	0.046*	0.052
11 – Solving environmental problems will require significant lifestyle changes	0.247	0.175	0.310	0.232	0.198	0.219	0.058	0.026	0.035	0.179	1	-0.017*	0.077
12 – Science and technology will solve our problems in the next 20 years	-0.095	0.015	0.006	-0.084	-0.017	-0.030	0.123	0.097	0.193	0.046	-0.017	1	0.170
13 – People have the right to modify the natural environment to suit their needs	-0.115	-0.046	-0.026	-0.092	-0.090	-0.010	0.068	0.084	0.145	0.052	0.077	0.170	1

(*) Correlation is not significant at the 0.05 level (2 - tailed). Listwise n = 1812.

TABLE B.2
KMO and Bartlett's test
(PCA to the items measuring general environmental attitudes)

Bartlett's Test of Sphericit	Approx. Chi-Square	3015.017
	Df	78
	p	0.000
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.762	

TABLE B.3
Anti-image matrix (PCA to the items measuring general environmental attitudes)

Items	1	2	3	4	5	6	7	8	9	10	11	12	13
1 – Humans are severely abusing the environment	**0.810***	-0.210	-0.135	-0.168	-0.118	-0.086	-0.017	-0.006	0.036	-0.055	-0.094	0.073	0.079
2 – To maintain a healthy economy, we will have to develop a "steady-state" economy where industrial growth is controlled	-0.210	**0.806***	-0.095	-0.098	-0.024	-0.133	0.032	0.018	-0.038	0.022	-0.038	-0.054	0.018
3 – The balance of nature is very delicate and easily upset	-0.135	-0.095	**0.814***	-0.071	-0.125	-0.215	-0.016	0.012	-0.028	-0.045	-0.177	-0.031	0.012
4 – People must live in harmony with nature to survive	-0.168	-0.098	-0.071	**0,806***	-0.203	-0.045	0.042	0.039	0.089	-0.012	-0.111	0.034	0.035
5 – When people interfere with nature, it often produces disastrous consequences	-0.118	-0.024	-0.125	-0.203	**0.810***	-0.028	-0.088	0.007	-0.030	-0.093	-0.053	-0.004	0.077
6 – There are limits to growth beyond which our industrialized society cannot expand	-0.086	-0.133	-0.215	-0.045	-0.028	**0.819***	-0.013	-0.013	-0.033	-0.113	-0.066	0.038	-0.008
7 – I feel incapable to act in the environmental problems resolution attempt	-0.017	0.032	-0.016	0.042	-0.088	-0.013	**0.628***	-0.422	-0.274	-0.056	-0.020	-0.041	0.009
8 – I don't have a complete knowledge to act consciously in the environmental problems resolution	-0.006	0.018	0.012	0.039	0.007	-0.013	-0.422	**0.644***	-0.095	-0.001	-0.008	-0.019	-0.036
9 – The environment deterioration will proceed and only afterwards something can be done	0.036	-0.038	-0.028	0.089	-0.030	-0.033	-0.274	-0.095	**0.717***	-0.098	0.004	-0.129	-0.092
10 – We are approaching the limit of the number of people the earth can support	-0.055	0.022	-0.045	-0.012	-0.093	-0.113	-0.056	-0.001	-0.098	**0.816***	-0.091	-0.025	-0.040
11 – Solving environmental problems will require significant lifestyle changes	-0.094	-0.038	-0.177	-0.111	-0.053	-0.066	-0.020	-0.008	0.004	-0.091	**0.817***	0.023	-0.114
12 – Science and technology will solve our problems in the next 20 years	0.073	-0.054	-0.031	0.034	-0.004	0.038	-0.041	-0.019	-0.129	-0.025	0.023	**0,689***	-0,136
13 – People have the right to modify the natural environment to suit their needs	0.079	0.018	0.012	0.035	0.077	-0.008	0.009	-0.036	-0.092	-0.040	-0.114	-0,136	**0,643***

(*) Measures of Sampling Adequacy (MSA)

TABLE B.4
Proportion of variance for each variable which is accounted for by the principal components (PCA to the items measuring general environmental attitudes)

Items	Initial	Extraction
1 – Humans are severely abusing the environment	1	0.502
2 – To maintain a healthy economy, we will have to develop a "steady-state" economy where industrial growth is controlled	1	0.589
3 – The balance of nature is very delicate and easily upset	1	0.459
4 – People must live in harmony with nature to survive	1	0.415
5 – When people interfere with nature, it often produces disastrous consequences	1	0.378
6 – There are limits to growth beyond which our industrialized society cannot expand	1	0.357
7 – I feel incapable to act in the environmental problems resolution attempt	1	0.701
8 – I don't have a complete knowledge to act consciously in the environmental problems resolution	1	0.604
9 – The environment deterioration will proceed and only afterwards something can be done	1	0.503
10 – We are approaching the limit of the number of people the earth can support	1	0.496
11 – Solving environmental problems will require significant lifestyle changes	1	0.468
12 – Science and technology will solve our problems in the next 20 years	1	0.643
13 – People have the right to modify the natural environment to suit their needs	1	0.613

TABLE B.5
Total variance explained
(PCA to the items measuring general environmental attitudes)

Components	Initial Eigenvalues		
	Total	% de Variance	% Cumulative Variance
1	2.679	20.609	20.609
2	1.984	15.263	35.872
3	1.125	8.655	44.527
4	0.939	7.220	51.747
5	0.889	6.839	58.586
6	0.870	6.694	65.280
7	0.761	5.855	71.135
8	0.722	5.556	76.691
9	0.698	5.367	82.058
10	0.641	4.929	86.987
11	0.618	4.755	91.742
12	0.589	4.532	96.274
13	0.484	3.726	100.000

FIGURE B.1
Scree plot
(PCA to the items measuring general environmental attitudes)

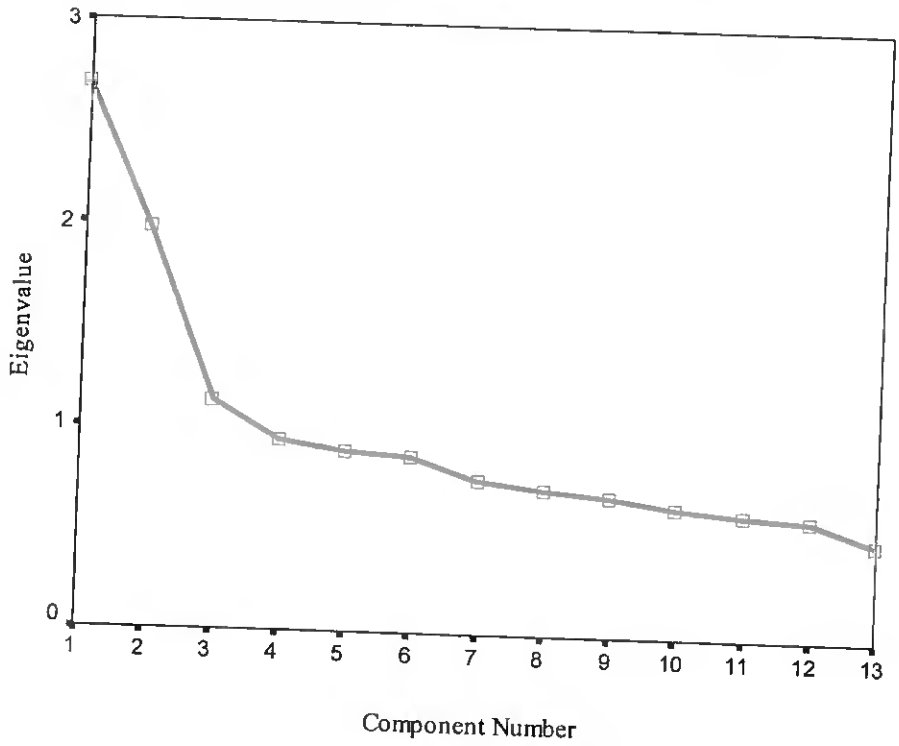


TABLE B.6
Original loading matrix
(PCA to the items measuring general environmental attitudes)

Items	Component			
	1	2	3	4
1 – Humans are severely abusing the environment	0.667	0.004	0.121	0.015
2 – To maintain a healthy economy, we will have to develop a "steady–state" economy where industrial growth is controlled	0.661	-0.169	-0.130	0.137
3 – The balance of nature is very delicate and easily upset	0.585	0.033	0.112	-0.032
4 – People must live in harmony with nature to survive	0.578	0.012	-0.207	-0.034
5 – When people interfere with nature, it often produces disastrous consequences	0.571	-0.288	-0.058	0.042
6 – There are limits to growth beyond which our industrialized society cannot expand	0.547	0.035	0.261	-0.315
7 – I feel incapable to act in the environmental problems resolution attempt	0.539	-0.108	0.102	0.526
8 – I don't have a complete knowledge to act consciously in the environmental problems resolution	0.157	0.745	-0.348	0.012
9 – The environment deterioration will proceed and only afterwards something can be done	0.104	0.695	0.007	0.094
10 – We are approaching the limit of the number of people the earth can support	0.067	0.684	-0.363	0.022
11 – Solving environmental problems will require significant lifestyle changes	-0.085	0.348	0.677	-0.164
12 – Science and technology will solve our problems in the next 20 years	0.394	0.260	0.141	-0.504
13 – People have the right to modify the natural environment to suit their needs	-0.052	0.406	0.475	0.500

TABLE B.7
Component transformation matrix
(PCA to the items measuring general environmental attitudes)

Components	1	2	3	4
1	0.920	0.920	0.122	0.369
2	-0.185	-0.185	0.882	0.224
3	-0.066	-0.066	-0.450	0.432
4	0.341	0.341	0.061	-0.792

TABLE B.8
Component score coefficient matrix
(PCA to the items measuring general environmental attitudes)

Items	Component			
	1	2	3	4
1 – Humans are severely abusing the environment	0.300	0.016	-0.093	-0.062
2 – To maintain a healthy economy, we will have to develop a "steady-state" economy where industrial growth is controlled	0.380	-0.030	-0.342	0.321
3 – The balance of nature is very delicate and easily upset	0.227	-0.015	0.126	0.078
4 – People must live in harmony with nature to survive	0.241	-0.076	-0.011	-0.084
5 – When people interfere with nature, it often produces disastrous consequences	0.197	0.113	0.030	-0.171
6 – There are limits to growth beyond which our industrialized society cannot expand	0.180	-0.005	0.154	0.054
7 – I feel incapable to act in the environmental problems resolution attempt	0.010	0.479	-0.039	-0.099
8 – I don't have a complete knowledge to act consciously in the environmental problems resolution	-0.011	0.454	-0.072	-0.113
9 – The environment deterioration will proceed and only afterwards something can be done	0.005	0.317	0.016	0.183
10 – We are approaching the limit of the number of people the earth can support	-0.080	0.045	0.563	-0.132
11 – Solving environmental problems will require significant lifestyle changes	0.055	-0.085	0.445	0.007
12 – Science and technology will solve our problems in the next 20 years	0.098	0.020	-0.201	0.673
13 – People have the right to modify the natural environment to suit their needs	-0.161	-0.130	0.426	0.447

TABLE B.9
Correlation matrix between each pair of original items measuring specific attitudes towards recycling

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 – My neighbors expect me to recycle household materials	1	0.757	0.471	0.488	0.407	0.03*	0.050	0.058	-0.01*	0.05*	0.066	0.271	0.223	0.094	0.157	0.103	-0.13	-0.19	-0.08	0.01*
2 – My friends expect me to recycle household materials	0.757	1	0.527	0.487	0.435	0.052	0.063	0.083	0.027*	0.04*	0.073	0.309	0.252	0.108	0.199	0.065	-0.15	-0.22	-0.13	-0.01*
3 – I expect that my friends recycle household materials	0.471	0.527	1	0.888	0.455	0.098	0.077	0.073	0.055	0.047	0.126	0.490	0.388	0.192	0.286	-0.06	-0.23	-0.19	-0.19	-0.01*
4 – I expect that my neighbors recycle household materials	0.488	0.487	0.888	1	0.468	0.093	0.068	0.060	0.058	0.04*	0.143	0.492	0.375	0.183	0.300	-0.05	-0.23	-0.19	-0.19	0.01*
5 – My family expects me to recycle frequently my household materials	0.407	0.435	0.455	0.468	1	0.058	0.107	0.078	0.05*	0.03*	0.119	0.504	0.482	0.205	0.358	-0.05	-0.29	-0.25	-0.24	-0.02*
6 – Household recycling is a major way to reduce lavishness	0.033	0.052	0.098	0.093	0.058	1	0.421	0.426	0.488	0.466	0.271	0.090	0.091	0.091	0.110	-0.14	-0.01*	0.03*	-0.10	0.141
7 – Household recycling is a major way to reduce litter	0.050	0.063	0.077	0.068	0.107	0.421	1	0.442	0.414	0.383	0.405	0.136	0.097	0.070	0.101	-0.13	-0.09	0.01*	-0.12	0.101
8 – Household recycling is a major way to conserve energy	0.058	0.083	0.073	0.060	0.078	0.426	0.442	1	0.373	0.383	0.367	0.091	0.057	0.046	0.114	-0.04*	-0.07	0*	-0.06	0.06*
9 – Household recycling is a major way to reduce pollution	-0.01	0.027	0.055	0.058	0.045	0.488	0.414	0.373	1	0.344	0.397	0.114	0.105	0.097	0.142	-0.17	-0.08	0.04*	-0.08	0.096
10 – Household recycling is a major way to reduce the wasteful use of land for dumps	0.045	0.036	0.047	0.042	0.032	0.466	0.383	0.383	0.344	1	0.293	0.04*	0.03*	0.094	0.072	-0.09	0.03*	0.04*	-0.05	0.183

(*) Correlation is not significant at the 0.05 level (2 - tailed). Listwise n = 1796.

TABLE B.9 (Cont.)
Correlation matrix between each pair of original items measuring specific attitudes towards recycling

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
11 – Household recycling is a major way to conserve natural resources	0.066	0.073	0.126	0.143	0.119	0.271	0.405	0.367	0.397	0.293	1	0.159	0.163	0.122	0.142	-0.19	-0.12	0.02*	-0.11	0.106
12 – I feel a strong personal obligation to recycle a large proportion of my household's recyclables	0.271	0.309	0.490	0.492	0.504	0.090	0.136	0.091	0.114	0.036	0.159	1	0.506	0.297	0.504	-0.15	-0.37	-0.24	-0.36	-0.03*
13 – I would feel guilty if I didn't recycle regularly my household's recyclables	0.223	0.252	0.388	0.375	0.482	0.091	0.097	0.057	0.105	0.030	0.163	0.506	1	0.321	0.355	-0.09	-0.21	-0.13	-0.20	0.02*
14 – I consider that the household waste separation should be compulsory by law	0.094	0.108	0.192	0.183	0.205	0.091	0.070	0.046	0.097	0.094	0.122	0.297	0.321	1	0.246	-0.16	-0.06	0.00*	-0.09	0.102
15 – I am willing to go blocks out of my way to recycle household materials on a regular basis	0.157	0.199	0.286	0.300	0.358	0.110	0.101	0.114	0.142	0.072	0.142	0.504	0.355	0.246	1	-0.12	-0.29	-0.11	-0.32	0.03*
16 – For me, recycling is just a matter of money: I wouldn't recycle materials I didn't get paid for	0.103	0.065	-0.06	-0.05	-0.05	-0.14	-0.13	-0.04	-0.17	-0.09	-0.19	-0.15	-0.09	-0.16	-0.12	1	0.171	0*	0.252	-0.06
17 – For me, to recycle household waste is a very difficult task	-0.13	-0.15	-0.23	-0.23	-0.29	-0.01	-0.09	-0.07	-0.08	0.027	-0.12	-0.37	-0.21	-0.06	-0.29	0.171	1	0.276	0.432	0.162
18 – Almost no one I know recycles any household materials	-0.19	-0.22	-0.19	-0.19	-0.25	0.03	0.01	0	0.037	0.044	0.019	-0.24	-0.13	0.000	-0.11	0	0.276	1	0.200	0.108
19 – To recycle household waste is not up to me	-0.08	-0.13	-0.19	-0.19	-0.24	-0.10	-0.12	-0.06	-0.08	-0.05	-0.11	-0.36	-0.20	-0.09	-0.32	0.252	0.432	0.200	1	0.05*
20 – Households like mine are responsible for a very large part of the materials disposed of in landfills	0.011	-0.01	-0.01	0.01	-0.02	0.14	0.101	0.058	0.096	0.183	0.106	-0.03	0.019	0.102	0.027	-0.06	0.162	0.108	0.045	1

(*) Correlation is not significant at the 0.05 level (2 - tailed). Listwise n = 1796.

TABLE B.10
KMO and Bartlett's test
(PCA to the items measuring specific attitudes towards recycling)

Bartlett's Test of Sphericit	Approx. Chi-Square	12343.380
	Df	190
	p	0.000
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.821	

TABLE B.11
Anti-image matrix (PCA to the items measuring specific attitudes towards recycling)

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 – My neighbors expect me to recycle household materials	**0.747**	-0.02	0.086	-0.18	-0.08	0.006	-0.01	0.010	0.053	-0.04	-0.02	0.009	0.010	-0.01	0.031	-0.09	0.009	0.027	-0.033	-0.03
2 – My friends expect me to recycle household materials	-0.02	**0.757**	-0.22	0.109	-0.12	0.003	0.004	-0.04	-0.04	0.024	0.009	0.007	0.013	0.003	-0.03	-0.03	-0.03	0.060	0.033	0.013
3 – I expect that my friends recycle household materials	0.086	-0.22	**0.747**	-0.81	0.017	-0.02	-0.01	-0.02	0.027	-0.01	0.035	-0.07	-0.08	-0.02	0.032	0.045	0.027	0.019	-0.028	0.016
4 – I expect that my neighbors recycle household materials	-0.79	0.109	-0.81	**,0.75**	-0.09	-0.02	0.036	0.03	-0.01	0.015	-0.07	-0.08	0.017	0.016	-0.04	-0.03	-0.01	-0.02	0.018	-0.02
5 – My family expects me to recycle frequently my household materials	-0.08	-0.12	0.017	-0.09	**0.922**	0.012	-0.04	-0.01	0.041	-0.01	0.003	-0.15	-0.25	-0.01	-0.09	-0.01	0.079	0.089	0.015	-0.01
6 – Household recycling is a major way to reduce lavishness	0.006	0.003	-0.02	-0.02	0.012	**0.813**	-0.14	-0.19	-0.29	-0.26	0.061	0.018	-0.03	-0.01	-0.01	0.043	-0.06	-0.01	0.058	-0.05
7 – Household recycling is a major way to reduce litter	-0.01	0.004	-0.01	0.036	-0.04	-0.14	**0.867**	-0.21	-0.14	-0.13	-0.19	-0.05	0.007	0.021	0.041	0.014	0.018	-0.02	0.042	-0.02
8 – Household recycling is a major way to conserve energy	0.010	-0.04	-0.02	0.034	-0.01	-0.19	-0.21	**0.850**	-0.08	-0.15	-0.17	-0.01	0.035	0.018	-0.04	-0.07	0.031	0.022	-0.034	0.037
9 – Household recycling is a major way to reduce pollution	0.053	-0.04	0.03	0.012	0.041	-0.29	-0.14	-0.08	**0.841**	-0.06	-0.20	-0.02	-0.03	-0.01	-0.05	0.064	0.040	-0.02	-0.035	-0.01
10 – Household recycling is a major way to reduce the wasteful use of land for dumps	-0.04	0.024	-0.01	0.015	-0.01	-0.26	-0.13	-0.15	-0.06	**0.850**	-0.08	0.027	0.038	-0.05	-0.01	0.011	-0.05	-0.01	0.017	-0.11

(a) Measures of Sampling Adequacy (MSA) are at bold.

TABLE B.11 (Cont.)
Anti-image matriz (PCA to the items measuring specific attitudes towards recycling)

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
11 – Household recycling is a major way to conserve natural resources	-0.02	0.009	0.035	-0.07	0.003	0.061	-0.19	-0.17	-0.20	-0.08	**0.849**	-0.01	-0.07	-0.02	-0.01	0.115	0.043	-0.04	-0.005	-0.05
12 – I feel a strong personal obligation to recycle a large proportion of my household's recyclables	0.009	0.007	-0.07	-0.08	-0.15	0.018	-0.05	-0.01	-0.02	0.027	-0.01	**0.903**	-0.22	-0.12	-0.27	0.038	0.106	0.085	0.114	0.036
13 – I would feel guilty if I didn't recycle regularly my household's recyclables	0.010	0.013	-0.08	0.017	-0.25	-0.03	0.007	0.035	-0.03	0.038	-0.07	-0.22	**0.888**	-0.18	-0.07	-0.02	-0.01	-0.02	0.002	-0.01
14 – I consider that the household waste separation should be compulsory by law	-0.01	0.003	-0.02	0.016	-0.01	-0.01	0.021	0.018	-0.01	-0.05	-0.02	-0.12	-0.18	**0.857**	-0.09	0.111	-0.05	-0.05	-0.030	-0.07
15 – I am willing to go blocks out of my way to recycle household materials on a regular basis	0.031	-0.03	0.032	-0.04	-0.09	-0.01	0.041	-0.04	-0.05	-0.01	-0.01	-0.27	-0.07	-0.09	**0.891**	-0.02	0.081	-0.05	0.135	-0.04
16 – For me, recycling is just a matter of money: I wouldn't recycle materials I didn't get paid for	-0.09	-0.03	0.045	-0.03	-0.01	0.043	0.014	-0.07	0.064	0.011	0.115	0.038	-0.02	0.111	-0.02	**0.768**	-0.08	0.032	-0.177	0.047
17 – For me, to recycle household waste is a very difficult task	0.009	-0.03	0.027	-0.01	0.079	-0.06	0.018	0.031	0.040	-0.05	0.043	0.106	-0.01	-0.05	0.081	-0.08	**0.827**	-0.16	-0.291	-0.14
18 – Almost no one I know recycles any household materials	0.027	0.060	0.019	-0.02	0.089	-0.01	-0.02	0.022	-0.02	-0.01	-0.04	0.085	-0.02	-0.05	-0.05	0.032	-0.16	**0.876**	-0.078	-0.05
19 – To recycle household waste is not up to me	-0.03	0.033	-0.03	0.018	0.015	0.058	0.042	-0.03	-0.04	0.017	-0.01	0.114	0.002	-0.03	0.135	-0.18	-0.29	-0.08	**0.824**	-0.01
20 – Households like mine are responsible for a very large part of the materials disposed of in landfills	-0.03	0.013	0.016	-0.02	-0.01	-0.05	-0.02	0.037	-0.01	-0.11	-0.05	0.036	-0.01	-0.07	-0.04	0.047	-0.14	-0.05	-0.005	**0.728**

(a) Measures of Sampling Adequacy (MSA) are at bold.

TABLE B.12
Proportion of variance for each variable which is accounted for by the principal components (PCA to the items measuring specific attitudes towards recycling)

Items	Initial	Extraction
1 – My neighbors expect me to recycle household materials	1	0.702
2 – My friends expect me to recycle household materials	1	0.706
3 – I expect that my friends recycle household materials	1	0.693
4 – I expect that my neighbors recycle household materials	1	0.687
5 – My family expects me to recycle frequently my household materials	1	0.528
6 – Household recycling is a major way to reduce lavishness	1	0.548
7 – Household recycling is a major way to reduce litter	1	0.540
8 – Household recycling is a major way to conserve energy	1	0.531
9 – Household recycling is a major way to reduce pollution	1	0.518
10 – Household recycling is a major way to reduce the wasteful use of land for dumps	1	0.486
11 – Household recycling is a major way to conserve natural resources	1	0.408
12 – I feel a strong personal obligation to recycle a large proportion of my household's recyclables	1	0.643
13 – I would feel guilty if I didn't recycle regularly my household's recyclables	1	0.511
14 – I consider that the household waste separation should be compulsory by law	1	0.491
15 – I am willing to go blocks out of my way to recycle household materials on a regular basis	1	0.449
16 – For me, recycling is just a matter of money: I wouldn't recycle materials I didn't get paid for	1	0.337
17 – For me, to recycle household waste is a very difficult task	1	0.609
18 – Almost no one I know recycles any household materials	1	0.390
19 – To recycle household waste is not up to me	1	0.520
20 – Households like mine are responsible for a very large part of the materials disposed of in landfills	1	0.350

TABLE B.13
Total variance explained
(PCA to the items measuring specific attitudes towards recycling)

Components	Initial Eigenvalues		
	Total	% de Variance	% Cumulative Variance
1	4.746	23.728	23.728
2	2.891	14.454	38.182
3	1.704	8.519	46.701
4	1.306	6.531	53.231
5	0.954	4.771	58.002
6	0.897	4.485	62.487
7	0.798	3.989	66.476
8	0.776	3.881	70.357
9	0.758	3.789	74.145
10	0.660	3.301	77.446
11	0.640	3.201	80.647
12	0.600	3.001	83.647
13	0.572	2.858	86.506
14	0.547	2.734	89.239
15	0.528	2.641	91.881
17	0.451	2.255	94.136
18	0.429	2.145	96.280
19	0.395	1.976	98.256
20	0.244	1.221	99.477

FIGURE B.2
Scree plot
(PCA to the items measuring specific attitudes towards recycling)

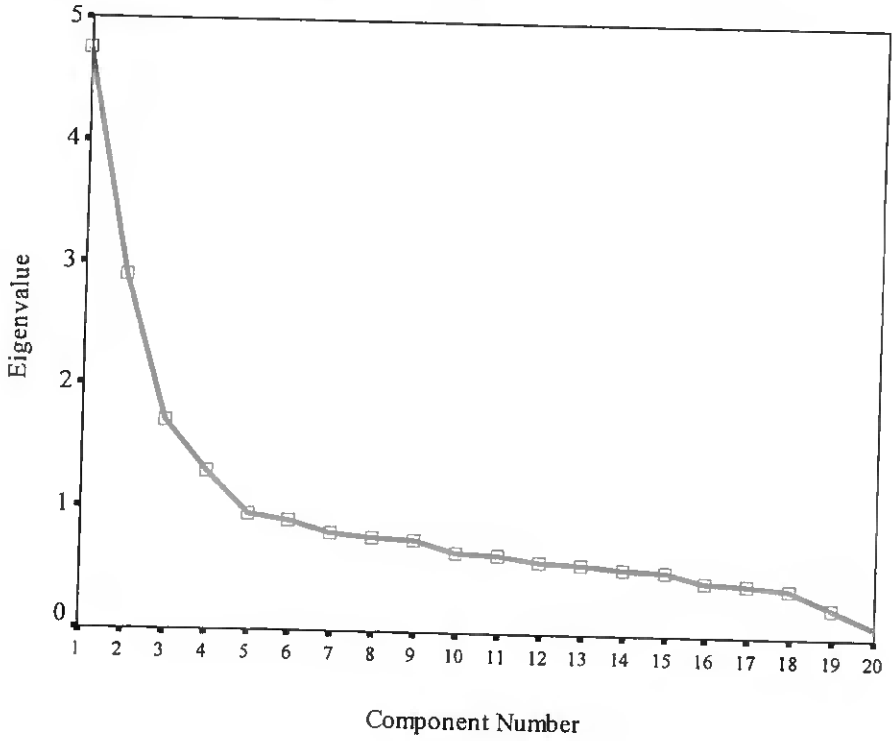


TABLE B.14
Original loading matrix
(PCA to the items measuring specific attitudes towards recycling)

Items	Component			
	1	2	3	4
1 – My neighbors expect me to recycle household materials	0.749	-0.257	0.246	0.067
2 – My friends expect me to recycle household materials	0.746	-0.259	0.241	0.076
3 – I expect that my friends recycle household materials	0.734	-0.140	-0.265	0.120
4 – I expect that my neighbors recycle household materials	0.692	-0.220	0.000	0.032
5 – My family expects me to recycle frequently my household materials	0.616	-0.280	0.474	-0.154
6 – Household recycling is a major way to reduce lavishness	0.611	-0.103	-0.151	0.323
7 – Household recycling is a major way to reduce litter	0.569	-0.290	0.523	-0.141
8 – Household recycling is a major way to conserve energy	0.563	-0.017	-0.320	0.170
9 – Household recycling is a major way to reduce pollution	0.301	0.662	0.129	-0.057
10 – Household recycling is a major way to reduce the wasteful use of land for dumps	0.293	0.655	-0.002	-0.059
11 – Household recycling is a major way to conserve natural resources	0.325	0.636	0.064	-0.161
12 – I feel a strong personal obligation to recycle a large proportion of my household's recyclables	0.229	0.630	0.192	-0.014
13 – I would feel guilty if I didn't recycle regularly my household's recyclables	0.291	0.607	0.151	-0.236
14 – I consider that the household waste separation should be compulsory by law	0.359	0.528	-0.007	-0.018
15 – I am willing to go blocks out of my way to recycle household materials on a regular basis	-0.439	0.004	0.525	0.227
16 – For me, recycling is just a matter of money: I wouldn't recycle materials I didn't get paid for	-0.453	0.111	0.489	, 0.390
17 – For me, to recycle household waste is a very difficult task	-0.194	-0.240	0.467	-0.154
18 – Almost no one I know recycles any household materials	0.362	0.053	-0.154	0.577
19 – To recycle household waste is not up to me	0.032	0.261	0.200	0.490
20 – Households like mine are responsible for a very large part of the materials disposed of in landfills	-0.319	0.245	0.121	0.462

TABLE B.15
Component transformation matrix
(PCA to the items measuring specific attitudes towards recycling)

Components	1	2	3	4
1	0.693	0.350	0.578	-0.250
2	0.693	0.350	0.578	-0.250
3	-0.381	0.904	-0.005	0.693
4	0.608	0.143	-0.598	-0.381

TABLE B.16
Component Score Coefficient Matrix
(PCA to the items measuring specific attitudes towards recycling)

Items	Component			
	1	2	3	4
1 – My neighbors expect me to recycle household materials	0.316	0.017	-0.174	0.018
2 – My friends expect me to recycle household materials	0.304	0.021	-0.156	-0.006
3 – I expect that my friends recycle household materials	0.227	-0.015	0.034	0.057
4 – I expect that my neighbors recycle household materials	0.225	-0.017	0.039	0.061
5 – My family expects me to recycle frequently my household materials	0.128	-0.023	0.098	-0.032
6 – Household recycling is a major way to reduce lavishness	0.006	0.249	-0.034	0.032
7 – Household recycling is a major way to reduce litter	-0.004	0.253	-0.053	-0.054
8 – Household recycling is a major way to conserve energy	0.029	0.260	-0.119	-0.075
9 – Household recycling is a major way to reduce pollution	-0.041	0.235	0.010	-0.008
10 – Household recycling is a major way to reduce the wasteful use of land for dumps	0.020	0.232	-0.046	0.079
11 – Household recycling is a major way to conserve natural resources	-0.019	0.194	0.037	0.004
12 – I feel a strong personal obligation to recycle a large proportion of my household's recyclables	0.024	-0.030	0.234	-0.053
13 – I would feel guilty if I didn't recycle regularly my household's recyclables	0.031	-0.050	0.265	0.115
14 – I consider that the household waste separation should be compulsory by law	-0.041	-0.059	0.344	0.294
15 – I am willing to go blocks out of my way to recycle household materials on a regular basis	-0.039	-0.017	0.253	-0.021
16 – For me, recycling is just a matter of money: I wouldn't recycle materials I didn't get paid for	0.178	-0.026	-0.252	0.037
17 – For me, to recycle household waste is a very difficult task	0.072	-0.017	-0.061	0.416
18 – Almost no one I know recycles any household materials	-0.061	-0.008	0.115	0.354
19 – To recycle household waste is not up to me	0.110	-0.022	-0.141	0.318
20 – Households like mine are responsible for a very large part of the materials disposed of in landfills	0.014	0.025	0.142	0.377

TABLE B.17
Correlation matrix between each pair of original items measuring logistics service satisfaction

Items	1	2	3	4	5	6	7	8	9	10	11
1 – Frequency of waste collection	1	0.803	0.726	0.627	0.678	0.371	0.352	0.485	0.460	0.520	0.598
2 – Emptying regularity	0.803	1	0.706	0.586	0.596	0.388	0.345	0.451	0.460	0.548	0.617
3 – Cleaning and maintenance	0.726	0.706	1	0.665	0.612	0.379	0.360	0.469	0.489	0.503	0.608
4 – Local safety	0.627	0.586	0.665	1	0.588	0.368	0.282	0.439	0.487	0.497	0.594
5 – Number of disposal containers	0.678	0.596	0.612	0.588	1	0.391	0.350	0.500	0.468	0.631	0.654
6 – Information availability	0.371	0.388	0.379	0.368	0.391	1	0.616	0.588	0.539	0.345	0.343
7 – Support and claim service	0.352	0.345	0.360	0.282	0.350	0.616	1	0.534	0.441	0.265	0.262
8 – System adequacy to lifestyle	0.485	0.451	0.469	0.439	0.500	0.588	0.534	1	0.560	0.480	0.512
9 – Number and type of accepted waste materials	0.460	0.460	0.489	0.487	0.468	0.539	0.441	0.560	1	0.455	0.473
10 – Distance to the disposal containers	0.520	0.548	0.503	0.497	0.631	0.345	0.265	0.480	0.455	1	0.766
11 – Disposal containers location	0.598	0.617	0.608	0.594	0.654	0.343	0.262	0.512	0.473	0.766	1

(*) All correlations are significant at the 0.05 level (2 - tailed). Listwise n = 1115

TABLE B.18
KMO and Bartlett's test
(PCA to the items measuring logistics service satisfaction)

Bartlett's Test of Sphericit	Approx. Chi-Square	7889.403
	Df	55
	p	0.000
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.912	

TABLE B.19
Anti-image matrix (PCA to the items measuring logistics service satisfaction)

Items	1	2	3	4	5	6	7	8	9	10	11
1 – Frequency of waste collection	**0.885**[*]	-0.530	-0.217	-0.120	-0.285	0.054	-0.020	-0.087	0.010	0.055	0.014
2 – Emptying regularity	-0.530	**0.898**[*]	-0.209	-0.009	0.065	-0.075	-0.029	0.059	-0.025	-0.099	-0.117
3 – Cleaning and maintenance	-0.217	-0.209	**0.941**[*]	-0.274	-0.070	0.025	-0.080	-0.011	-0.076	0.057	-0.121
4 – Local safety	-0.120	-0.009	-0.274	**0.948**[*]	-0.114	-0.062	0.071	-0.001	-0.131	0.019	-0.147
5 – Number of disposal containers	-0.285	0.065	-0.070	-0.114	**0.945**[*]	-0.029	-0.057	-0.047	-0.018	-0.225	-0.136
6 – Information availability	0.054	-0.075	0.025	-0.062	-0.029	**0.874**[*]	-0.397	-0.250	-0.219	-0.018	0.043
7 – Support and claim service	-0.020	-0.029	-0.080	0.071	-0.057	-0.397	**0.869**[*]	-0.222	-0.073	0.025	0.089
8 – System adequacy to lifestyle	-0.087	0.059	-0.011	-0.001	-0.047	-0.250	-0.222	**0.933**[*]	-0.186	-0.062	-0.140
9 – Number and type of accepted waste materials	0.010	-0.025	-0.076	-0.131	-0.018	-0.219	-0.073	-0.186	**0.952**[*]	-0.077	-0.026
10 – Distance to the disposal containers	0.055	-0.099	0.057	0.019	-0.225	-0.018	0.025	-0.062	-0.077	**0.882**[*]	-0.530
11 – Disposal containers location	0.014	-0.117	-0.121	-0.147	-0.136	0.043	0.089	-0.140	-0.026	-0.530	**0.892**[*]

(*) Measures of Sampling Adequacy (MSA)

TABLE B.20
Proportion of variance for each variable which is accounted for by the principal components (PCA to the items measuring logistics service satisfaction)

Items	Initial	Extraction
1 – Frequency of waste collection	1	0.837
2 – Emptying regularity	1	0.785
3 – Cleaning and maintenance	1	0.785
4 – Local safety	1	0.643
5 – Number of disposal containers	1	0.684
6 – Information availability	1	0.758
7 – Support and claim service	1	0.745
8 – System adequacy to lifestyle	1	0.698
9 – Number and type of accepted waste materials	1	0.590
10 – Distance to the disposal containers	1	0.857
11 – Disposal containers location	1	0.839

TABLE B.21
Total variance explained
(PCA to the items measuring logistics service satisfaction)

Components	Initial Eigenvalues		
	Total	% de Variance	% Cumulative Variance
1	6.119	55.631	55.631
2	1.350	12.270	67.902
3	0.753	6.845	74.746
4	0.547	4.970	79.716
5	0.427	3.884	83.600
6	0.399	3.625	87.225
7	0.377	3.429	90.654
8	0.362	3.291	93.945
9	0.280	2.542	96.487
10	0.214	1.943	98.430
11	0.173	1.570	100.000

FIGURE B.3
Scree plot
(PCA to the items measuring logistics service satisfaction)

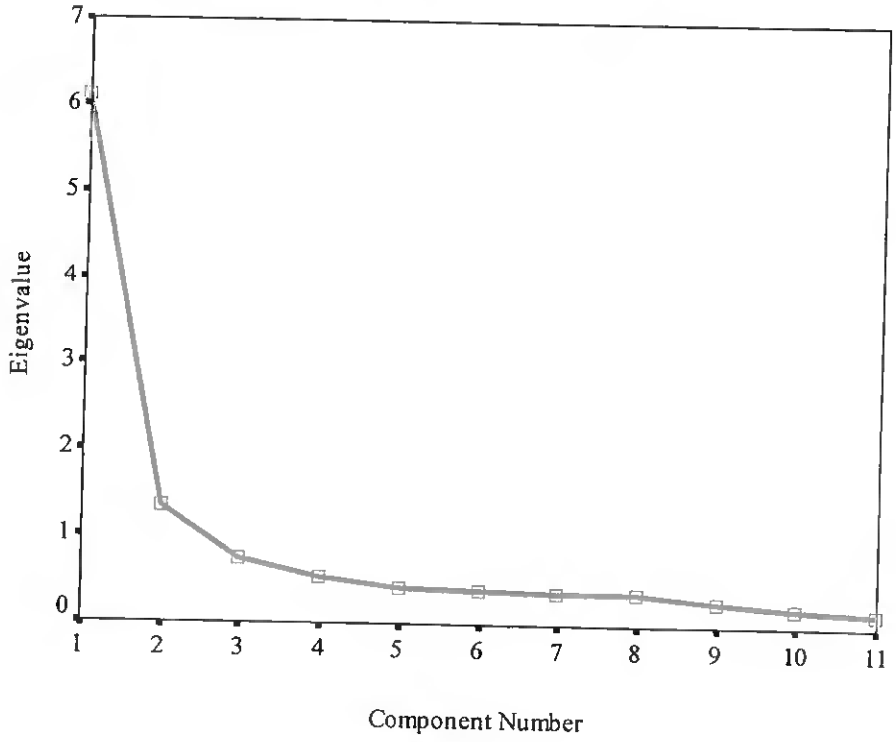


TABLE B.22
Original loading matrix
(PCA to the items measuring logistics service satisfaction)

Items	Component		
	1	2	3
1 – Frequency of waste collection	0.825	-0.234	-0.319
2 – Emptying regularity	0.810	-0.198	-0.300
3 – Cleaning and maintenance	0.809	-0.226	-0.282
4 – Local safety	0.802	-0.179	0.096
5 – Number of disposal containers	0.800	-0.273	0.354
6 – Information availability	0.760	-0.206	-0.152
7 – Support and claim service	0.743	-0.216	0.508
8 – System adequacy to lifestyle	0.724	0.378	0.177
9 – Number and type of accepted waste materials	0.702	0.293	0.105
10 – Distance to the disposal containers	0.625	0.607	-0.004
11 – Disposal containers location	0.555	0.642	-0.157

TABLE B.23
Component transformation matrix
(PCA to the items measuring logistics service satisfaction)

Components	1	2	3
1	0.681	0.510	0.525
2	-0.419	0.860	-0.292
3	-0.600	-0.021	0.800

TABLE B.24
Component Score Coefficient Matrix
(PCA to the items measuring logistics service satisfaction)

Items	Component		
	1	2	3
1 – Frequency of waste collection	0.419	-0.072	-0.217
2 – Emptying regularity	0.385	-0.069	-0.181
3 – Cleaning and maintenance	0.391	-0.050	-0.206
4 – Local safety	0.270	-0.064	-0.052
5 – Number of disposal containers	0.069	-0.050	0.209
6 – Information availability	-0.116	0.439	-0.082
7 – Support and claim service	-0.012	0.459	-0.258
8 – System adequacy to lifestyle	-0.178	0.296	0.168
9 – Number and type of accepted waste materials	-0.096	0.242	0.108
10 – Distance to the disposal containers	-0.255	-0.090	0.650
11 – Disposal containers location	-0.108	-0.17	0.503

Appendix C

ADDITIONAL ELEMENTS FROM THE APPLICATION OF LOGISTIC REGRESSION

TABLE C.1
Multicollinearity analysis
(R^2 from multiple regressions)

Linear Regression	Dependent Variable	R^2
1	PC1 – Balance and limits of nature	0.152
2	PC2 – Incapability and lack of knowledge	0.193
3	PC3 – Importance of life style change	0.111
4	PC4 – Man over nature	0.111
5	PC5 – Social norm	0.109
6	PC6 – Awareness of recycling benefits	0.109
7	PC7 – Personal norm	0.154
8	PC8 – Difficulty or indifference	0.163
9	PC9 – Disposal conditions	0.073
10	PC10 – System adequacy and information	0.108
11	PC11 – Disposal containers location	0.069
12	Age	0.317

TABLE C.2
Results of the estimation of the initial logistic regression model

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 – Balance and limits of nature	0.028	0.163	0.030	1	0.862
PC2 – Incapability and lack of knowledge	0.179	0.168	1.140	1	0.286
PC3 – Importance of life style change	0.136	0.152	0.804	1	0.370
PC4 – Man over nature	0.114	0.161	0.498	1	0.480
PC5 – Social norm	0.727	0.159	20.908	1	0.000
PC6 – Awareness of recycling benefits	0.079	0.153	0.263	1	0.608
PC7 – Personal norm	0.955	0.168	32.407	1	0.000
PC8 – Difficulty or indifference	-1.490	0.192	60.122	1	0.000
PC9 – Disposal conditions	0.110	0.147	0.560	1	0.454
PC10 – System adequacy and information	0.407	0.150	7.362	1	0.007
PC11 – Disposal containers location	0.480	0.158	9.255	1	0.002
Space to store	0.845	0.319	7.015	1	0.008
Gender	0.226	0.305	0.547	1	0.459
Age	0.022	0.013	2.738	1	0.098
Medium-education	0.415	0.546	0.579	1	0.447
Technical-education	-0.425	0.681	0.390	1	0.532
Higher-education	0.250	0.558	0.201	1	0.654
Medium-income	-0.056	0.520	0.011	1	0.915
Higher-income	0.195	0.602	0.105	1	0.745
Constant	-1.223	0.143	1.709	1	0.191
-2 ln L			311.698		

TABLE C.3
Results of the estimation of the initial logistic regression model with quadratic effects

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 – Balance and limits of nature	0.164	0.178	0.851	1	0.356
PC2 – Incapability and lack of knowledge	0.161	0.176	0.841	1	0.359
PC3 – Importance of life style change	0.143	0.159	0.811	1	0.368
PC4 – Man over nature	0.086	0.169	0.261	1	0.609
PC5 – Social norm	0.642	0.183	12.272	1	0.000
PC6 – Awareness of recycling benefits	0.117	0.258	0.204	1	0.651
PC7 – Personal norm	1.097	0.197	30.899	1	0.000
PC8 – Difficulty or indifference	-1.586	0.208	58.103	1	0.000
PC9 – Disposal conditions	-0.143	0.162	0.779	1	0.378
PC10 – System adequacy and information	0.485	0.161	9.091	1	0.003
PC11 – Disposal containers location	0.603	0.172	12.235	1	0.000
Space to store	0.767	0.328	5.473	1	0.019
Gender	0.081	0.057	2.027	1	0.154
Age	0.283	0.325	0.755	1	0.385
Medium-education	-0.302	0.553	0.298	1	0.585
Technical-education	0.089	0.637	0.019	1	0.889
Higher-education	0.254	0.556	0.209	1	0.647
Medium-income	-0.674	0.695	0.941	1	0.332
Higher-income	0.224	0.574	0.153	1	0.696
$PC1^2$	0.203	0.124	2.657	1	0.103
$PC2^2$	-0.003	0.126	0.001	1	0.980
$PC3^2$	0.095	0.107	0.781	1	0.377
$PC4^2$	-0.008	0.121	0.004	1	0.948
$PC5^2$	0.091	0.139	0.432	1	0.511
$PC6^2$	0.032	0.157	0.041	1	0.840
$PC7^2$	0.165	0.139	1.407	1	0.236
$PC8^2$	0.164	0.154	1.134	1	0.287
$PC9^2$	0.175	0.125	1.972	1	0.160
$PC10^2$	-0.149	0.134	1.237	1	0.266
$PC11^2$	-0.101	0.121	0.695	1	0.404
Age^2	-0.001	0.001	1.273	1	0.259
Constant	-2.581	1.313	3.864	1	0.049
-2 ln L			298.939		
G^2	311.698 – 298.939 = 12.759 (p = 0.387; df = 12)				

TABLE C.4
Results of the estimation of the initial logistic regression model with cubic effects

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 – Balance and limits of nature	0.497	0.269	3.418	1	0.065
PC2 – Incapability and lack of knowledge	0.348	0.293	1.408	1	0.235
PC3 – Importance of life style change	-0.079	0.251	0.099	1	0.753
PC4 – Man over nature	0.097	0.280	0.121	1	0.728
PC5 – Social norm	0.551	0.243	5.131	1	0.024
PC6 – Awareness of recycling benefits	0.153	0.254	0.365	1	0.546
PC7 – Personal norm	1.364	0.297	21.061	1	0.000
PC8 – Difficulty or indifference	-1.933	0.308	39.330	1	0.000
PC9 – Disposal conditions	-0.232	0.235	0.975	1	0.323
PC10 – System adequacy and information	0.597	0.258	5.352	1	0.021
PC11 – Disposal containers location	1.087	0.287	14.309	1	0.000
Space to store	0.807	0.336	5.754	1	0.016
Gender	0.063	0.032	3.752	1	0.053
Age	0.267	0.326	0.669	1	0.413
Medium-education	-0.332	0.554	0.359	1	0.549
Technical-education	-0.092	0.646	0.020	1	0.887
Higher-education	0.171	0.576	0.088	1	0.766
Medium-income	-0.755	0.710	1.133	1	0.287
Higher-income	0.071	0.587	0.014	1	0.904
$PC1^3$	-0.053	0.074	0.513	1	0.474
$PC2^3$	-0.072	0.089	0.654	1	0.419
$PC3^3$	0.053	0.061	0.730	1	0.393
$PC4^3$	0.014	0.078	0.031	1	0.861
$PC5^3$	0.035	0.069	0.261	1	0.610
$PC6^3$	-0.019	0.054	0.120	1	0.729
$PC7^3$	-0.131	0.095	1.908	1	0.167
$PC8^3$	0.117	0.097	1.457	1	0.227
$PC9^3$	0.032	0.063	0.261	1	0.610
$PC10^3$	-0.101	0.089	1.288	1	0.256
$PC11^3$	-0.037	0.064	0.340	1	0.560
Age^3	0.000	0.000	2.072	1	0.150
Constant	-1.884	1.101	2.929	1	0.087
-2 ln L			294.005		
G^2			311.698 – 294.005 = 17.693 (p = 0.125; df = 12)		

TABLE C.5
Results of the estimation of the initial logistic regression model with interaction effects

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 – Balance and limits of nature	28.223	105.047	0.072	1	0.788
PC2 – Incapability and lack of knowledge	18.916	102.001	0.034	1	0.853
PC3 – Importance of life style change	7.536	96.080	0.006	1	0.937
PC4 – Man over nature	0.972	138.503	0.000	1	0.994
PC5 – Social norm	-15.166	163.222	0.009	1	0.926
PC6 – Awareness of recycling benefits	13.886	43.645	0.101	1	0.750
PC7 – Personal norm	28.516	62.448	0.209	1	0.648
PC8 – Difficulty or indifference	-59.829	127.270	0.221	1	0.638
PC9 – Disposal conditions	31.406	120.758	0.068	1	0.795
PC10 – System adequacy and information	8.228	135.157	0.004	1	0.951
PC11 – Disposal containers location	27.021	89.934	0.090	1	0.764
Space to store	3.209	2.210	2.108	1	0.147
Gender	3.622	1.824	3.944	1	0.047
Age	-0.148	6.828	0.000	1	0.983
Medium-education	44.614	214.855	0.043	1	0.836
Technical-education	42.784	214.964	0.040	1	0.842
Higher-education	45.939	214.853	0.046	1	0.831
Medium-income	-57.200	206.777	0.077	1	0.782
Higher-income	-57.384	206.776	0.077	1	0.781
PC1 × Space to store	-1.288	1.696	0.577	1	0.447
PC2 × Space to store	1.890	1.806	1.095	1	0.295
PC3 × Space to store	-0.002	0.558	0.000	1	0.997
PC4 × Space to store	-0.525	0.636	0.682	1	0.409
PC5 × Space to store	1.032	0.704	2.149	1	0.143
PC6 × Space to store	0.267	0.590	0.204	1	0.652
PC7 × Space to store	-0.201	0.597	0.113	1	0.737
PC8 × Space to store	0.386	0.802	0.232	1	0.630
PC9 × Space to store	0.590	0.596	0.981	1	0.322
PC10 × Space to store	-0.802	0.605	1.758	1	0.185
PC11 × Space to store	0.150	0.553	0.074	1	0.786
Age × Space to store	-0.030	0.066	0.210	1	0.647

TABLE C.5 (Cont.)
Results of the estimation of the initial logistic regression model with interaction effects

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 × Gender	-0.528	0.795	0.440	1	0.507
PC2 × Gender	-0.855	0.720	1.408	1	0.235
PC3 × Gender	-0.948	0.626	2.292	1	0.130
PC4 × Gender	0.691	0.663	1.085	1	0.298
PC5 × Gender	-0.867	0.733	1.397	1	0.237
PC6 × Gender	-1.111	1.585	0.491	1	0.483
PC7 × Gender	-0.481	0.645	0.558	1	0.455
PC8 × Gender	0.912	0.812	1.262	1	0.261
PC9 × Gender	0.029	0.663	0.002	1	0.965
PC10 × Gender	-0.606	0.655	0.855	1	0.355
PC11 × Gender	0.651	0.652	0.995	1	0.319
Age × Gender	-0.111	0.054	4.280	1	0.039
PC1 × Medium-education	1.064	59.199	0.000	1	0.986
PC2 × Medium-education	-70.554	147.142	0.003	1	0.959
PC3 × Medium-education	15.824	86.697	0.033	1	0.855
PC4 × Medium-education	1.315	63.520	0.000	1	0.983
PC5 × Medium-education	5.184	69.866	0.006	1	0.941
PC6 × Medium-education	-11.414	89.861	0.016	1	0.899
PC7 × Medium-education	-20.312	120.621	0.028	1	0.866
PC8 × Medium-education	11.211	81.521	0.019	1	0.891
PC9 × Medium-education	-10.403	88.224	0.014	1	0.906
PC10 × Medium-education	10.339	53.924	0.037	1	0.848
PC11 × Medium-education	-3.517	94.175	0.001	1	0.970
Age × Medium-education	-1.024	4.980	0.042	1	0.837
PC1 × Technical-education	-0.179	59.203	0.000	1	0.998
PC2 × Technical-education	-6.221	147.193	0.002	1	0.966
PC3 × Technical-education	15.791	86.673	0.033	1	0.855
PC4 × Technical-education	1.010	63.541	0.000	1	0.987
PC5 × Technical-education	7.381	69.867	0.011	1	0.916
PC6 × Technical-education	-9.725	89.870	0.012	1	0.914
PC7 × Technical-education	-18.054	120.663	0.022	1	0.881
PC8 × Technical-education	10.036	81.586	0.015	1	0.902
PC9 × Technical-education	-10.551	88.328	0.014	1	0.905
PC10 × Technical-education	7.112	53.984	0.017	1	0.895
PC11 × Technical-education	-4.405	94.182	0.002	1	0.963
Age × Technical-education	-0.935	4.984	0.035	1	0.851

TABLE C.5 (Cont.)
Results of the estimation of the initial logistic regression model with interaction effects

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 × Higher-education	0.199	59.197	0.000	1	0.997
PC2 × Higher-education	-9.041	147.139	0.004	1	0.951
PC3 × Higher-education	15.291	86.698	0.031	1	0.860
PC4 × Higher-education	0.830	63.520	0.000	1	0.990
PC5 × Higher-education	5.465	69.866	0.006	1	0.938
PC6 × Higher-education	-11.634	89.862	0.017	1	0.897
PC7 × Higher-education	-19.216	120.620	0.025	1	0.873
PC8 × Higher-education	11.956	81.518	0.022	1	0.883
PC9 × Higher-education	-11.358	88.227	0.017	1	0.898
PC10 × Higher-education	9.195	53.926	0.029	1	0.865
PC11 × Higher-education	-4.478	94.174	0.002	1	0.962
Age× Higher-education	-1.055	4.980	0.045	1	0.832
PC1 × Medium-income	-27.826	113.192	0.060	1	0.806
PC2 × Medium-income	-10.358	94.329	0.012	1	0.913
PC3 × Medium-income	-22.398	120.004	0.035	1	0.852
PC4 × Medium-income	-2.800	118.961	0.001	1	0.981
PC5 × Medium-income	11.154	142.407	0.006	1	0.938
PC6 × Medium-income	-1.832	109.504	0.000	1	0.987
PC7 × Medium-income	-7.060	110.223	0.004	1	0.949
PC8 × Medium-income	44.991	152.121	0.087	1	0.767
PC9 × Medium-income	-21.197	125.490	0.029	1	0.866
PC10 × Medium-income	-16.014	148.691	0.012	1	0.914
PC11 × Medium-income	-22.904	100.980	0.051	1	0.821
Age× Medium-income	1.305	6.242	0.044	1	0.834

TABLE C.5 (Cont.)
Results of the estimation of the initial logistic regression model with interaction effects

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 × Higher-income	-26.088	113.194	0.053	1	0.818
PC2 × Higher-income	-8.281	94.332	0.008	1	0.930
PC3 × Higher-income	-22.389	120.008	0.035	1	0.852
PC4 × Higher-income	0.096	118.969	0.000	1	1.000
PC5 × Higher-income	12.249	142.406	0.007	1	0.931
PC6 × Higher-income	-2.548	109.502	0.001	1	0.981
PC7 × Higher-income	-7.341	110.226	0.004	1	0.947
PC8 × Higher-income	43.383	152.115	0.081	1	0.775
PC9 × Higher-income	-21.149	125.494	0.028	1	0.866
PC10 × Higher-income	-16.619	148.697	0.012	1	0.911
PC11 × Higher-income	-22.143	100.983	0.048	1	0.826
Age× Higher-income	1.312	6.242	0.044	1	0.834
Constant	7.289	263.371	0.001	1	V978
-2 ln L	213.007				
G^2	311.698 – 213.007 = 98.691 (p = 0.131; df = 84)				

TABLE C.6
Results of the estimation of the initial logistic regression model with the square and the cub of the predicted probabilities (Ramsey test)

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 – Balance and limits of nature	0.056	0.164	0.116	1	0.733
PC2 – Incapability and lack of knowledge	0.372	0.196	3.609	1	0.057
PC3 – Importance of life style change	0.262	0.168	2.427	1	0.119
PC4 – Man over nature	0.246	0.174	1.985	1	0.159
PC5 – Social norm	1.531	0.449	11.630	1	0.001
PC6 – Awareness of recycling benefits	0.167	0.159	1.104	1	0.293
PC7 – Personal norm	2.047	0.587	12.165	1	0.000
PC8 – Difficulty or indifference	-3.169	0.888	12.738	1	0.000
PC9 – Disposal conditions	-0.266	0.165	2.580	1	0.108
PC10 – System adequacy and information	0.863	0.283	9.310	1	0.002
PC11 – Disposal containers location	0.996	0.309	10.371	1	0.001
Space to store	1.736	0.580	8.960	1	0.003
Gender	0.046	0.018	6.619	1	0.010
Age	0.355	0.317	1.257	1	0.262
Medium-education	-0.070	0.512	0.019	1	0.892
Technical-education	0.404	0.601	0.451	1	0.502
Higher-education	0.913	0.608	2.253	1	0.133
Medium-income	-0.916	0.741	1.531	1	0.216
Higher-income	0.458	0.574	0.639	1	0.424
$\left[\hat{p}(y=1\|X)\right]^2$	-7.100	6.045	1.379	1	0.240
$\left[\hat{p}(y=1\|X)\right]^3$	6.066	4.398	1.902	1	0.168
Constant	-0.166	1.039	0.026	1	0.873
-2 ln L			307.891		
G^2	$311.698 - 307.891 = 3.807$ ($p = 0.149$; $df = 2$)				

TABLE C.7
Frequency table for the standardized residuals from the initial logistic regression model

Standardized Residues	Absolute Frequency	Relative Frequency
< -2.5	7	1.823 %
From -2.5 to -2	5	1.302 %
From -2 to 2	362	94.271 %
From 2 to 2.5	8	2.083 %
> 2.5	2	0.521 %
Total	384	100 %

TABLE C.8
Minimum and maximum values for the Dbeta associated with each independent variable of the initial logistic regression model

Dbeta(s)	Minimum Value	Maximum Value
Dbeta-PC1	-0.064	0.033
Dbeta-PC2	-0.047	0.031
Dbeta-PC3	-0.046	0.045
Dbeta-PC4	-0.043	0.042
Dbeta-PC5	-0.033	0.032
Dbeta-PC6	-0.032	0.043
Dbeta-PC7	-0.047	0.029
Dbeta-PC8	-0.018	0.059
Dbeta-PC9	-0.035	0.046
Dbeta-PC10	-0.048	0.035
Dbeta-PC11	-0.048	0.042
Dbeta-Space to store	-0.081	0.072
Dbeta-Gender	-0.063	0.072
Dbeta-Age	-0.006	0.004
Dbeta-Medium-education	-0.235	0.190
Dbeta-Technical-education	-0.173	0.234
Dbeta-Higher-education	-0.190	0.199
Dbeta-Medium-income	-0.207	0.180
Dbeta-Higher-income	0.186	0.186
Dbeta-Constant	-0.326	0.465

TABLE C.9
Results of the restricted logistic regression model, estimated for testing H_1

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC2 – Incapability and lack of knowledge	0.133	0.158	0.708	1	0.400
PC5 – Social norm	0.735	0.156	22.082	1	0.000
PC6 – Awareness of Recycling benefits	0.076	0.151	0.249	1	0.618
PC7 – Personal norm	0.946	0.164	33.202	1	0.000
PC8 – Difficulty or indifference	-1.472	0.189	60.354	1	0.000
PC9 – Disposal conditions	-0.118	0.146	0.644	1	0.422
PC10 – System adequacy and information	0.404	0.149	7.341	1	0.007
PC11 – Disposal containers location	0.489	0.157	9.706	1	0.002
Space to store	0.855	0.318	7.237	1	0.007
Gender	0.207	0.301	0.471	1	0.492
Age	0.024	0.013	3.335	1	0.068
Medium-education	0.483	0.538	0.806	1	0.369
Technical-education	-0.329	0.675	0.238	1	0.626
Higher-education	0.342	0.550	0.387	1	0.534
Medium-income	-0.027	0.518	0.003	1	0.958
Higher-income	0.230	0.601	0.147	1	0.702
Constant	-1.402	0.919	2.329	1	0.127
-2 ln L			312.858		
G^2	312.858 - 311.698 = 1.16 (p = 0.763; df = 3)				

TABLE C.10
Results of the restricted logistic regression model, estimated for testing H_2

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 – Balance and limits of nature	0.046	0.162	0.079	1	0.778
PC3 – Importance of life style change	0.068	0.155	0.193	1	0.660
PC4 – Man over nature	0.721	0.159	20.644	1	0.000
PC5 – Social norm	0.052	0.151	0.119	1	0.730
PC6 – Awareness of recycling benefits	0.914	0.163	31.561	1	0.000
PC7 – Personal norm	-1.446	0.186	60.287	1	0.000
PC8 – Difficulty or indifference	-0.107	0.146	0.534	1	0.465
PC9 – Disposal conditions	0.486	0.157	9.556	1	0.002
PC10 – System adequacy and information	0.413	0.150	7.603	1	0.006
PC11 – Disposal containers location	0.820	0.318	6.658	1	0.010
Space to store	0.217	0.306	0.505	1	0.477
Gender	0.023	0.013	3.098	1	0.078
Age	0.439	0.545	0.647	1	0.421
Medium-education	-0.426	0.682	0.390	1	0.532
Technical-education	0.226	0.559	0.163	1	0.686
Higher-education	-0.050	0.517	0.009	1	0.923
Medium-income	0.209	0.598	0.122	1	0.727
Higher-income	-1.289	0.934	1.904	1	0.168
Constant	0.046	0.162	0.079	1	0.778
-2 ln L			312.848		
G^2	312.848 - 311.698 = 1.15 (p = 0.284; df = 1)				

TABLE C.11
Results of the restricted logistic regression model, estimated for testing H_3

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 – Balance and limits of nature	0.119	0.127	0.868	1	0.351
PC2 – Incapability and lack of knowledge	-0.296	0.129	5.239	1	0.022
PC3 – Importance of life style change	0.045	0.123	0.133	1	0.715
PC4 – Man over nature	0.106	0.128	0.691	1	0.406
PC9 – Disposal conditions	0.062	0.119	0.272	1	0.602
PC10 – System adequacy and information	0.567	0.124	20.872	1	0.000
PC11 – Disposal containers location	0.577	0.130	19.653	1	0.000
Space to store	0.994	0.253	15.469	1	0.000
Gender	0.203	0.245	0.688	1	0.407
Age	0.032	0.011	8.898	1	0.003
Medium-education	0.771	0.449	2.939	1	0.086
Technical-education	-0.047	0.524	0.008	1	0.929
Higher-education	0.689	0.458	2.263	1	0.133
Medium-income	0.011	0.438	0.001	1	0.980
Higher-income	0.095	0.497	0.036	1	0.849
Constant	-1.886	0.783	5.811	1	0.016
-2 ln L			438.929		
G^2	438.929 - 311.698 = 127.231 (p = 0.000; df = 4)				

TABLE C.12
Results of the restricted logistic regression model, estimated for testing H_4

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 – Balance and limits of nature	0.015	0.157	0.009	1	0.926
PC2 – Incapability and lack of knowledge	0.213	0.165	1.672	1	0.196
PC3 – Importance of life style change	0.165	0.146	1.276	1	0.259
PC4 – Man over nature	0.133	0.155	0.737	1	0.391
PC5 – Social norm	0.786	0.156	25.279	1	0.000
PC6 – Awareness of recycling benefits	0.077	0.149	0.270	1	0.604
PC7 – Personal norm	1.013	0.162	39.251	1	0.000
PC8 – Difficulty or indifference	-1.519	0.185	67.397	1	0.000
Space to store	0.820	0.307	7.127	1	0.008
Gender	0.164	0.293	0.312	1	0.576
Age	0.014	0.012	1.299	1	0.254
Medium-education	0.322	0.519	0.386	1	0.534
Technical-education	-0.364	0.644	0.319	1	0.572
Higher-education	0.012	0.527	0.001	1	0.982
Medium-income	0.190	0.500	0.144	1	0.705
Higher-income	0.368	0.582	0.399	1	0.528
Constant	-1.018	0.887	1.317	1	0.251
-2 ln L			330.008		
G^2	330.008 - 311.698 = 18.31 (p = 0.000; df = 3)				

TABLE C.13
Results of the restricted logistic regression model, estimated for testing H_5

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 – Balance and limits of nature	0.026	0.162	0.025	1	0.874
PC2 – Incapability and lack of knowledge	0.144	0.165	0.767	1	0.381
PC3 – Importance of life style change	0.148	0.151	0.965	1	0.326
PC4 – Man over nature	0.124	0.159	0.607	1	0.436
PC5 – Social norm	0.739	0.157	22.011	1	0.000
PC6 – Awareness of recycling benefits	0.045	0.152	0.087	1	0.768
PC7 – Personal norm	0.978	0.167	34.321	1	0.000
PC8 – Difficulty or indifference	-1.508	0.191	62.460	1	0.000
PC9 – Disposal conditions	-0.089	0.146	0.374	1	0.541
PC10 – System adequacy and information	0.398	0.150	7.072	1	0.008
PC11 – Disposal containers location	0.485	0.155	9.769	1	0.002
Gender	0.140	0.298	0.219	1	0.640
Age	0.020	0.013	2.537	1	0.111
Medium-education	0.404	0.537	0.566	1	0.452
Technical-education	-0.409	0.669	0.373	1	0.541
Higher-education	0.274	0.550	0.249	1	0.618
Medium-income	0.044	0.516	0.007	1	0.932
Higher-income	0.261	0.592	0.194	1	0.660
Constant	0.026	0.162	0.025	1	0.874
-2 ln L			318.912		
G^2	318.912 - 311.698 = 7.214 (p = 0.007; df = 1)				

TABLE C.14
Results of the restricted logistic regression model, estimated for testing H_6

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 – Balance and limits of nature	0.038	0.162	0.056	1	0.813
PC2 – Incapability and lack of knowledge	0.175	0.167	1.099	1	0.295
PC3 – Importance of life style change	0.123	0.151	0.664	1	0.415
PC4 – Man over nature	0.118	0.161	0.539	1	0.463
PC5 – Social norm	0.721	0.159	20.642	1	0.000
PC6 – Awareness of recycling benefits	0.097	0.151	0.409	1	0.522
PC7 – Personal norm	0.948	0.167	32.286	1	0.000
PC8 – Difficulty or indifference	-1.485	0.191	60.447	1	0.000
PC9 – Disposal conditions	-0.102	0.147	0.479	1	0.489
PC10 – System adequacy and information	0.403	0.150	7.265	1	0.007
PC11 – Disposal containers location	0.477	0.158	9.163	1	0.002
Space to store	0.821	0.317	6.704	1	0.010
Age	0.022	0.013	2.700	1	0.100
Medium-education	0.453	0.545	0.689	1	0.407
Technical-education	-0.387	0.681	0.324	1	0.569
Higher-education	0.289	0.558	0.267	1	0.605
Medium-income	-0.090	0.519	0.030	1	0.862
Higher-income	0.147	0.599	0.061	1	0.806
Constant	-1.073	0.913	1.383	1	0.240
-2 ln L	312.246				
G^2	312.246 - 311.698 = 0.548 (p = 0.459; df = 1)				

TABLE C.15
Results of the restricted logistic regression model, estimated for testing H_7

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC1 – Balance and limits of nature	0.037	0.159	0.054	1	0.817
PC2 – Incapability and lack of knowledge	0.222	0.163	1.865	1	0.172
PC3 – Importance of life style change	0.139	0.146	0.914	1	0.339
PC4 – Man over nature	0.144	0.156	0.861	1	0.353
PC5 – Social norm	0.766	0.157	23.757	1	0.000
PC6 – Awareness of recycling benefits	0.058	0.148	0.151	1	0.698
PC7 – Personal norm	0.991	0.165	35.930	1	0.000
PC8 – Difficulty or indifference	-1.468	0.187	61.361	1	0.000
PC9 – Disposal conditions	-0.144	0.143	1.025	1	0.311
PC10 – System adequacy and information	0.364	0.145	6.264	1	0.012
PC11 – Disposal containers location	0.389	0.149	6.859	1	0.009
Space to store	0.793	0.313	6.439	1	0.011
Gender	0.193	0.297	0.422	1	0.516
Constant	-0.257	0.256	1.005	1	0.316
-2 ln L			318.628		
G^2	318.628 - 311.698 = 6.93 (p = 0.327; df = 6)				

TABLE C.16
Results of the restricted logistic regression model, estimated for testing the inclusion of irrelevant variables (first test)

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC5 – Social norm	0.729	0.154	22.285	1	0.000
PC7 – Personal norm	0.928	0.159	34.183	1	0.000
PC8 – Difficulty or indifference	-1.406	0.179	61.960	1	0.000
PC10 – System adequacy and information	0.402	0.144	7.751	1	0.005
PC11 – Disposal containers location	0.440	0.150	8.612	1	0.003
Space to store	0.774	0.307	6.358	1	0.012
Age	0.000	0.004	0.001	1	0.975
Constant	-0.928	0.410	5.125	1	0.024
-2 ln L	320.842				
G^2	320.842 – 311.698 = 9.144 (p = 0.691; df = 12)				

TABLE C.17
Results of the restricted logistic regression model, estimated for testing the inclusion of irrelevant variables (second test)

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC5 – Social norm	0.774	0.153	25.501	1	0.000
PC7 – Personal norm	0.945	0.158	35.779	1	0.000
PC8 – Difficulty or indifference	-1.384	0.177	61.428	1	0.000
PC10 – System adequacy and information	0.379	0.142	7.112	1	0.008
PC11 – Disposal containers location	0.399	0.147	7.347	1	0.007
Space to store	0.725	0.304	5.675	1	0.017
Constant	-0.166	0.167	0.987	1	0.320
-2 ln L_α	828.159				
-2 ln L	322.982				
G^2 (test to the exclusion of variable Age)	322.982 – 320.842 = 2.14 (p = 0.144; df = 1)				
G^2 (Omnibus test)	829.159 – 322.982 = 506.177 (p = 0.000; df = 6)				
$\hat{C}$ (Hosmer and Lemershow's test)	5.408 (p = 0.713; df = 8)				

TABLE C.18
Results of the estimation of the final logistic regression model with quadratic effects

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC5 – Social norm	0.679	0.173	15.369	1	0.000
PC7 – Personal norm	1.051	0.174	36.638	1	0.000
PC8 – Difficulty or indifference	-1.432	0.181	62.778	1	0.000
PC10 – System adequacy and information	0.398	0.151	6.938	1	0.008
PC11 – Disposal containers location	0.404	0.144	7.833	1	0.005
Space to store	0.689	0.307	5.019	1	0.025
$PC5^2$	0.097	0.129	0.562	1	0.454
$PC7^2$	0.173	0.130	1.773	1	0.183
$PC8^2$	0.142	0.147	0.927	1	0.336
$PC10^2$	-0.075	0.126	0.350	1	0.554
$PC11^2$	-0.059	0.098	0.364	1	0.546
Constant	-0.378	0.273	1.911	1	0.167
-2 ln L			318.596		
G^2	$322.982 - 318.596 = 4.386$ ($p = 0.495$; $df = 5$)				

TABLE C.19
Results of the estimation of the final logistic regression model with cubic effects

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC5 – Social norm	0.614	0.230	7.110	1	0.008
PC7 – Personal norm	1.221	0.263	21.468	1	0.000
PC8 – Difficulty or indifference	-1.725	0.270	40.847	1	0.000
PC10 – System adequacy and information	0.821	0.263	9.768	1	0.002
PC11 – Disposal containers location	0.422	0.231	3.338	1	0.068
Space to store	0.718	0.312	5.298	1	0.021
$PC5^3$	0.033	0.065	0.262	1	0.609
$PC7^3$	-0.103	0.086	1.425	1	0.233
$PC8^3$	0.127	0.090	1.972	1	0.160
$PC10^3$	-0.161	0.084	3.681	1	0.055
$PC11^3$	-0.017	0.053	0.106	1	0.744
Constant	-0.217	0.176	1.522	1	0.217
-2 ln L			314.706		
G^2	$322.982 - 314.706 = 8.276$ ($p = 0.142$; $df = 5$)				

TABLE C.20
Results of the estimation of the final logistic regression model with interaction effects

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC5 – Social norm	0.701	0.185	14.294	1	0.000
PC7 – Personal norm	1.074	0.206	27.223	1	0.000
PC8 – Difficulty or indifference	-1.395	0.222	39.518	1	0.000
PC10 – System adequacy and information	0.529	0.173	9.380	1	0.002
PC11 – Disposal containers location	0.588	0.185	10.070	1	0.002
Space to store	0.710	0.309	5.293	1	0.021
Space to store × PC5	0.347	0.352	0.971	1	0.324
Space to store × PC7	-0.230	0.340	0.455	1	0.500
Space to store × PC8	-0.159	0.384	0.172	1	0.678
Space to store × PC10	-0.546	0.326	2.801	1	0.094
Space to store × PC11	-0.569	0.326	3.048	1	0.081
Constant	-0.147	0.173	0.720	1	0.396
-2 ln L			314.899		
G^2	322.982 – 314.899 = 8.083 (p = 0.152; df = 5)				

TABLE C.21
Results of the estimation of the initial logistic regression model with the square and the cub of the predicted probabilities (Ramsey test)

Independent Variables	$\hat{\beta}$	S.E.	Wald	df	p
PC5 – Social norm	1.629	0.478	11.609	1	0.001
PC7 – Personal norm	1.998	0.576	12.050	1	0.001
PC8 – Difficulty or indifference	-2.929	0.829	12.493	1	0.000
PC10 – System adequacy and information	0.816	0.271	9.079	1	0.003
PC11 – Disposal containers location	0.831	0.269	9.573	1	0.002
Space to store	1.533	0.533	8.257	1	0.004
$\left[\hat{p}(y=1\|X)\right]^2$	-10.188	5.718	3.175	1	0.075
$\left[\hat{p}(y=1\|X)\right]^3$	7.220	4.117	3.076	1	0.079
Constant	1.629	0.478	11.609	1	0.001
-2 ln L			317.410		
G^2	322.982 – 317.410 = 5.572 (p = 0.06; df = 2)				

TABLE C.22
Frequency table for the standardized residuals from the final logistic regression model

Standardized Residues	Absolute Frequency	Relative Frequency
< -2.5	6	1.563 %
From -2.5 to -2	3	0.781 %
From -2 to 2	367	95.573 %
From 2 to 2.5	6	1.563 %
> 2.5	2	0.521 %
Total	384	100 %

TABLE C.23
Minimum and maximum values for the Dbeta associated with each independent variable of the final logistic regression model

Dbeta(s)	Minimum Value	Maximum Value
Dbeta-PC5	-0.032	0.035
Dbeta-PC7	-0.044	0.023
Dbeta-PC8	-0.015	0.063
Dbeta-PC10	-0.044	0.031
Dbeta-PC11	-0.041	0.039
Dbeta-Space to store	-0.062	0.065
Dbeta-Constant	-0.026	0.031

TABLE C.24
Classification table of the final logistic regression model

Observed cases	Predicted cases		Totals
	y = 0	y = 1	
y = 0	120 (72.3%)	46	166
y = 1	32	186 (85.3%)	218
Totals	152	232	384
Correctly classified cases	79.687%		
Incorrectly classified cases	20.313%;		
False negatives	21.052%		
False positives	27.711%		
Z^* (Huberty test)	11.278 (p = 0.000)		
$Z^*_{y=0}$ (Huberty test)	7.558 (p = 0.000)		
$Z^*_{y=1}$ (Huberty test)	8.509 (p = 0.000)		

Appendix D

ADDITIONAL ELEMENTS FROM THE APPLICATION OF STRUCTURAL EQUATION MODELING

TABLE D.1
Latent variables, observed variables and labels (*)

Latent Variables	Observed Variables and Scales	Label
Recycling behavior (RB)	The household usually separates and disposes of recyclable materials?	RB1
	Frequency of separation and disposal of recyclable materials at the "Eco-point" container	RB2
	Frequency of separation and disposal of recyclable materials at the glass container	RB3
	Adherence level to separation and disposal of recyclable materials	RB4
Attitude towards recycling (ATT)	Household recycling is an important way to conserve natural resources × Importance of saving natural resources and the environment (less waste/pollution)	ATT1
	Household recycling is an important way to conserve energy × Importance of saving natural resources and the environment (less waste/pollution)	ATT2
	Household recycling is an important way to reduce pollution × Importance of saving natural resources and the environment (less waste/pollution)	ATT3
	Household recycling is an important way to reduce lavishness × Importance of saving natural resources and the environment (less waste/pollution)	ATT4
	Household recycling is an important way to reduce the amount of waste disposed at landfills × Importance of reducing the amount of waste disposed at landfills	ATT5
Subjective norms (SN)	My friends expect me to recycle household materials × Importance of friends' pressure as a reason to recycle	SN1
	My neighbors expect me to recycle household materials × Importance of neighbors' pressure as a reason to recycle	SN2
	My family expect me to recycle household materials × Importance of family's pressure as a reason to recycle	SN3
Perceived behavior control (PBC)	For me, recycling household waste is a very difficult task × Recycling household waste is not up to me	PBC
Perceived convenience (CONV)	Disposal conditions (mean of the items of satisfaction with: Frequency of waste collection, emptying regularity, cleaning and maintenance, local safety and number of disposal containers)	CONV1
	System adequacy and information (mean of the items of satisfaction with: Information availability, support and claim service, system adequacy to lifestyle and number and type of accepted waste materials)	CONV2
	Disposal containers location (mean of the items of satisfaction with: Distance to the disposal containers and disposal containers location)	CONV3
	Is there any "Eco-point" container in your residence area?	CONV4
Specific knowledge (KN)	Should bottles and other glass packaging be separated and disposed for recycling?	KN1
	Should paper /cardboard packaging be separated and disposed for recycling?	KN2
	Should cans be separated and disposed for recycling?	KN3
	Should plastic packaging be separated and disposed for recycling?	KN4
Personal norms (PN)	I feel a strong personal obligation to recycle a large proportion of by households' recyclables	PN1
	I would feel guilty if I didn't recycle regularly my households' recyclables	PN2
	I am willing to go blocks out of my way to recycle household materials on a regular basis	PN3
General environmental attitudes (GEA)	When people interfere with nature, it often produces disastrous consequences	GEA1
	People must live in harmony with nature to survive	GEA2
	The balance of nature is very delicate and easily upset	GEA3
	There are limits of growth beyond which our industrialized society cannot expand	GEA4
	Humans are severely abusing the environment	GEA5
	To maintain a healthy economy, we will have to develop a "steady-state" economy where industrial growth is controlled	GEA6
Personal values (PV)	Satisfaction in increasing ways to reduce lavishness	PV1
	Satisfaction in promoting actions able to help changing the world	PV2
	Satisfaction in helping others	PV3
Communication (COM)	Have you received any information about selective-collection through TV?	COM1
	Have you received any information about selective-collection through billboards?	COM2
	Have you received any information about selective-collection through the "Eco-points"?	COM3
	Have you received any information about selective-collection through radio?	COM4
	Have you received any information about selective-collection through national newspapers?	COM5

TABLE D.2
Equations and other elements of the model

Structural model

$$\begin{bmatrix}\eta_{RB}\\ \eta_{ATT}\\ \eta_{PBC}\\ \eta_{KN}\\ \eta_{PN}\\ \eta_{GEA}\end{bmatrix}=\begin{bmatrix}0 & \beta_{12} & \beta_{13} & 0 & \beta_{15} & 0\\ 0 & 0 & 0 & 0 & 0 & \beta_{26}\\ 0 & 0 & 0 & \beta_{34} & 0 & \beta_{36}\\ 0 & 0 & 0 & 0 & 0 & 0\\ 0 & 0 & 0 & 0 & 0 & 0\\ 0 & 0 & 0 & 0 & 0 & 0\end{bmatrix}\begin{bmatrix}\eta_{RB}\\ \eta_{ATT}\\ \eta_{PBC}\\ \eta_{KN}\\ \eta_{PN}\\ \eta_{GEA}\end{bmatrix}+\begin{bmatrix}\gamma_{11} & 0 & 0 & 0\\ 0 & 0 & 0 & 0\\ 0 & \gamma_{32} & \gamma_{33} & \gamma_{34}\\ 0 & 0 & 0 & \gamma_{44}\\ \gamma_{51} & 0 & 0 & 0\\ 0 & 0 & \gamma_{63} & 0\end{bmatrix}\begin{bmatrix}\xi_{SN}\\ \xi_{CONV}\\ \xi_{PV}\\ \xi_{COM}\end{bmatrix}+\begin{bmatrix}\zeta_{RB}\\ \zeta_{ATT}\\ \zeta_{PBC}\\ \zeta_{KN}\\ \zeta_{PN}\\ \zeta_{GEB}\end{bmatrix}$$

Measurement model (exogenous indicators)

$$\begin{bmatrix}x_{sn1}\\ x_{sn2}\\ x_{sn3}\\ x_{conv1}\\ x_{conv2}\\ x_{conv3}\\ x_{conv4}\\ x_{pv1}\\ x_{pv2}\\ x_{pv3}\\ x_{com1}\\ x_{com2}\\ x_{com3}\\ x_{com4}\\ x_{com5}\end{bmatrix}=\begin{bmatrix}\lambda^{x}_{11} & 0 & 0 & 0\\ \lambda^{x}_{21} & 0 & 0 & 0\\ \lambda^{x}_{31} & 0 & 0 & 0\\ 0 & \lambda^{x}_{12} & 0 & 0\\ 0 & \lambda^{x}_{22} & 0 & 0\\ 0 & \lambda^{x}_{32} & 0 & 0\\ 0 & \lambda^{x}_{42} & 0 & 0\\ 0 & 0 & \lambda^{x}_{13} & 0\\ 0 & 0 & \lambda^{x}_{23} & 0\\ 0 & 0 & \lambda^{x}_{33} & 0\\ 0 & 0 & 0 & \lambda^{x}_{14}\\ 0 & 0 & 0 & \lambda^{x}_{24}\\ 0 & 0 & 0 & \lambda^{x}_{34}\\ 0 & 0 & 0 & \lambda^{x}_{44}\\ 0 & 0 & 0 & \lambda^{x}_{54}\end{bmatrix}\begin{bmatrix}\xi_{SN}\\ \xi_{CONV}\\ \xi_{PV}\\ \xi_{COM}\end{bmatrix}+\begin{bmatrix}\delta_{sn1}\\ \delta_{sn2}\\ \delta_{sn3}\\ \delta_{conv1}\\ \delta_{conv2}\\ \delta_{conv3}\\ \delta_{conv4}\\ \delta_{pv1}\\ \delta_{pv2}\\ \delta_{pv3}\\ \delta_{com1}\\ \delta_{com2}\\ \delta_{com3}\\ \delta_{com4}\\ \delta_{com5}\end{bmatrix}$$

Measurement model (endogenous indicators)

$$\begin{bmatrix}y_{rb1}\\ y_{rb2}\\ y_{rb3}\\ y_{rb4}\\ y_{att1}\\ y_{att2}\\ y_{att3}\\ y_{att4}\\ y_{att5}\\ y_{pbc}\\ y_{kn1}\\ y_{kn2}\\ y_{kn3}\\ y_{kn4}\\ y_{pn1}\\ y_{pn2}\\ y_{pn3}\\ y_{gea1}\\ y_{gea2}\\ y_{gea3}\\ y_{gea4}\\ y_{gea5}\\ y_{gea6}\end{bmatrix}=\begin{bmatrix}\lambda^{y}_{11} & 0 & 0 & 0 & 0 & 0\\ \lambda^{y}_{21} & 0 & 0 & 0 & 0 & 0\\ \lambda^{y}_{31} & 0 & 0 & 0 & 0 & 0\\ \lambda^{y}_{41} & 0 & 0 & 0 & 0 & 0\\ 0 & \lambda^{y}_{12} & 0 & 0 & 0 & 0\\ 0 & \lambda^{y}_{22} & 0 & 0 & 0 & 0\\ 0 & \lambda^{y}_{32} & 0 & 0 & 0 & 0\\ 0 & \lambda^{y}_{42} & 0 & 0 & 0 & 0\\ 0 & \lambda^{y}_{52} & 0 & 0 & 0 & 0\\ 0 & 0 & \lambda^{y}_{13} & 0 & 0 & 0\\ 0 & 0 & 0 & \lambda^{y}_{14} & 0 & 0\\ 0 & 0 & 0 & \lambda^{y}_{24} & 0 & 0\\ 0 & 0 & 0 & \lambda^{y}_{34} & 0 & 0\\ 0 & 0 & 0 & \lambda^{y}_{44} & 0 & 0\\ 0 & 0 & 0 & 0 & \lambda^{y}_{15} & 0\\ 0 & 0 & 0 & 0 & \lambda^{y}_{25} & 0\\ 0 & 0 & 0 & 0 & \lambda^{y}_{35} & 0\\ 0 & 0 & 0 & 0 & 0 & \lambda^{y}_{16}\\ 0 & 0 & 0 & 0 & 0 & \lambda^{y}_{26}\\ 0 & 0 & 0 & 0 & 0 & \lambda^{y}_{36}\\ 0 & 0 & 0 & 0 & 0 & \lambda^{y}_{46}\\ 0 & 0 & 0 & 0 & 0 & \lambda^{y}_{56}\\ 0 & 0 & 0 & 0 & 0 & \lambda^{y}_{66}\end{bmatrix}\begin{bmatrix}\eta_{RB}\\ \eta_{ATT}\\ \eta_{PBC}\\ \eta_{KN}\\ \eta_{PN}\\ \eta_{GEA}\end{bmatrix}+\begin{bmatrix}\varepsilon_{rb1}\\ \varepsilon_{rb2}\\ \varepsilon_{rb3}\\ \varepsilon_{rb4}\\ \varepsilon_{att1}\\ \varepsilon_{att2}\\ \varepsilon_{att3}\\ \varepsilon_{att4}\\ \varepsilon_{att5}\\ \varepsilon_{pbc}\\ \varepsilon_{kn1}\\ \varepsilon_{kn2}\\ \varepsilon_{kn3}\\ \varepsilon_{kn4}\\ \varepsilon_{pn1}\\ \varepsilon_{pn2}\\ \varepsilon_{pn3}\\ \varepsilon_{gea1}\\ \varepsilon_{gea2}\\ \varepsilon_{gea3}\\ \varepsilon_{gea4}\\ \varepsilon_{gea5}\\ y_{gea6}\end{bmatrix}$$

Other matrices in the model

$$\Phi=\begin{bmatrix}\phi_{11} & \cdots & \phi_{14}\\ \cdots & \cdots & \cdots\\ \phi_{41} & \cdots & \phi_{44}\end{bmatrix};\ \Psi_{(6\times6)}=\left[\psi_{ij}\right];\ \Theta_{\delta(15\times15)}=\left[\theta^{\delta}_{ij}\right];\ \Theta_{\varepsilon(23\times23)}=\left[\theta^{\varepsilon}_{ij}\right];$$

Ψ, Θ_{δ} and Θ_{ε} are diagonal matrices.

TABLE D.3
Evaluation of the t-rule

Number of non-redundant elements of the input covariance matrix	$\frac{1}{2}(23+15)(23+15+1) = 741$
Free parameters to be estimated	$6\beta + 7\gamma + 23\lambda^{y} - 6\lambda^{y} + 15\lambda^{x} - 4\lambda^{x} + 10\phi + 6\psi + 15\theta^{\delta} + 23\theta^{\varepsilon} - 1\theta^{\varepsilon} = 94$
Degrees of freedom (t)	$741 - 94 = 647$

TABLE D.4
Evaluating the reliability of the latent variables

Latent Variables	Cronbach Alpha	Composite reliability	Variance extracted
1 – Recycling behavior	0.7439	0.7409	0.4195
2 – Attitude towards recycling	0.9067	0.9108	0.6604
3 – Subjective norms	0.8155	0.8369	0.6373
4 – Perceived convenience	0.7796	0.7927	0.5050
5 – Specific knowledge	0.7386	0.7365	0.4160
6 – Personal norms	0.7124	0.7239	0.4717
7 – General environmental attitudes	0.6451	0.6473	0.2370
8 – Personal values	0.7780	0.7911	0.5637
9 – Communication	0.6331	0.6425	0.2704

TABLE D.5
Estimated correlations between each pair of latent variables (*)

Latent Variables	1	2	3	4	5	6	7	8	9	10
1 – Recycling behavior	-----	0.131	0.272	0.532	0.338	0.288	0.672	0.075	0.146	0.026
2 – Attitude towards recycling	-----	-----	0.059	0.150	0.031	0.178	0.277	0.387	0.288	0.051
3 – Subjective norms	-----	-----	-----	0.155	0.131	0.166	0.280	0.039	-0.061	-0.09
4 – Perceived behavior control	-----	-----	-----	-----	0.228	0.493	0.554	0.100	0.167	0.066
5 – Perceived convenience	-----	-----	-----	-----	-----	0.367	0.244	-0.06	0.071	0.086
6 – Specific knowledge	-----	-----	-----	-----	-----	-----	0.584	0.035	0.158	0.120
7 – Personal norms	-----	-----	-----	-----	-----	-----	-----	0.250	0.247	0.151
8 – General environmental attitudes	-----	-----	-----	-----	-----	-----	-----	-----	0.270	0.130
9 – Personal values	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10 – Communication	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

(*) These correlations were obtained from a separate confirmatory factorial analysis carried out with the ten latent variables and the corresponding indicators. Chi-square = 1926.325 (p = 0.000), GFI = 0.908, RMSEA = 0.046, AGFI = 0.891, NFI = 0.862, TLI = 0.888, IFI = 0.902, PNFI = 0.762, Normed Chi-square = 3.097.

TABLE D.6
Results from the estimation of measurement model

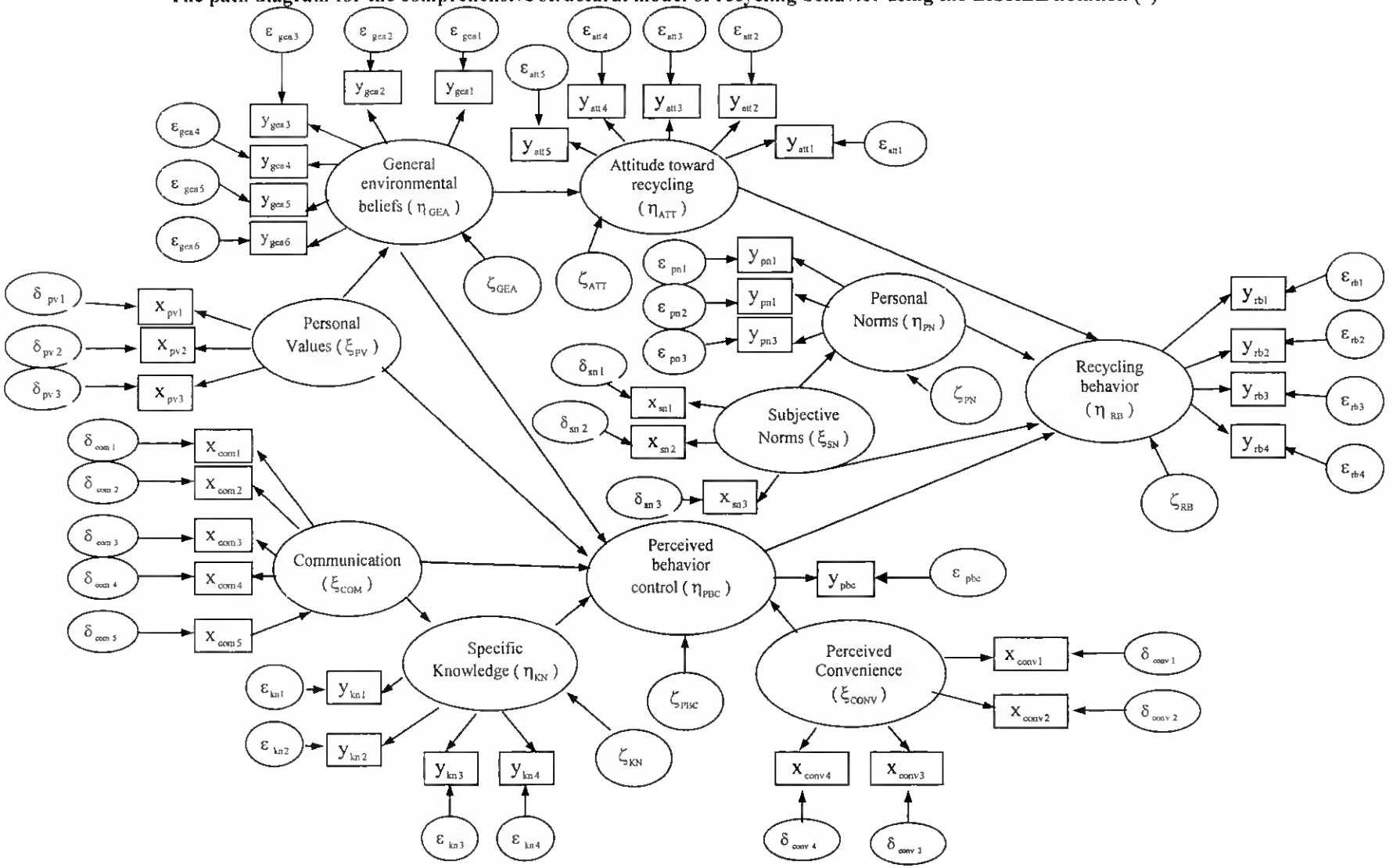
Hypothesized Relations	Unstandardized Estimates	t	p	Standardized Estimates
RB → RB1	1			0.711
RB → RB2	2.200	17.471	0.000	0.661
RB → RB3	1.910	17.747	0.000	0.674
RB → RB4	1.007	14.470	0.000	0.532
ATT → ATT1	1			0.811
ATT → ATT2	1.086	26.858	0.000	0.766
ATT → ATT3	0.977	32.002	0.000	0.872
ATT → ATT4	1.024	31.434	0.000	0.861
ATT → ATT5	1.011	27.448	0.000	0.779
SN → SN1	1			0.892
SN → SN1	0.892	26.230	0.000	0.867
SN → SN3	0.758	19.597	0.000	0.604
PBC_{lat} → PBC	1			0.718
CONV → CONV1	1			0.872
CONV → CONV2	0.648	21.353	0.000	0.679
CONV → CONV3	1.132	24.305	0.000	0.797
CONV → CONV4	0.327	12.174	0.000	0.404
KN → KN1	1			0.680
KN → KN2	1.311	18.359	0.000	0.760
KN → KN3	0.802	14.029	0.000	0.528
KN → KN4	0.915	15.369	0.000	0.588
PN → PN1	1			0.807
PN → PN2	0.909	15.055	0.000	0.667
PN → PN3	0.722	13.952	0.000	0.565
GEA → GEA1	1			0.435
GEA → GEA2	0.879	9.261	0.000	0.505
GEA → GEA3	1.127	9.384	0.000	0.520
GEA → GEA4	1.013	8.690	0.000	0.445
GEA → GEA5	1.162	9.822	0.000	0.584
GEA → GEA6	0.854	8.284	0.000	0.409
PV → PV1	1			0.783
PV → PV2	1.257	19.484	0.000	0.855
PV → PV3	0.608	17.105	0.000	0.588
COM → COM1	1			0.595
COM → COM2	0.806	9.216	0.000	0.413
COM → COM3	0.809	8.834	0.000	0.390
COM → COM4	1.248	11.397	0.000	0.605
COM → COM5	1.111	11.058	0.000	0.584

TABLE D.7
Assessment of the statistical significance of regression weights
(Two-tailed individual significance tests: $\alpha = 0.05$)

Hypothesized Relations	Unstandardized Estimates	t	p	Standardized Estimates	Comments		
					Right sign?	Statistically significant?	Hypothesis
H_1: ATT → RB	-0.014	-2.210	0.027	-0.070	No	Yes	Rejected
H_2: SN → RB	0.019	3.055	0.002	0.101	Yes	Yes	Non-rejected
H_3: PBC → RB	0.151	15.708	0.000	0.772	Yes	Yes	Non-rejected
H_4: KN → PBC	4.959	15.458	0.000	0.817	Yes	Yes	Non-rejected
H_5: CONV → PBC	0.428	4.131	0.000	0.143	Yes	Yes	Non-rejected
H_6: SN → PN	0.087	7.247	0.000	0.281	Yes	Yes	Non-rejected
PN → RB	0.185	7.903	0.000	0.304	Yes	Yes	----------
H_7: SN → RB (Indirect)	0.010 (0.087 × 0.185)	------	0.010	0.101 (0.281 × 0.304)	Yes	Yes	Non-rejected
H_9: GEA → ATT	2.414	8.020	0.000	0.416	Yes	Yes	Non-rejected
H_{10}: GEA → PBC	0.523	2.078	0.038	0.089	Yes	Yes	Non-rejected
H_{11}: PV → GEA	0.147	6.313	0.000	0.306	Yes	Yes	Non-rejected
H_{12}: PV → PBC	0.219	2.076	0.038	0.077	Yes	Yes	Non-rejected
H_{13}: COM → KN	0.156	2.942	0.003	0.143	Yes	Yes	Non-rejected
H_{14}: COM → PBC	-0.465	-1.615	0.106	-0.066	No	No	Rejected

FIGURE D.1

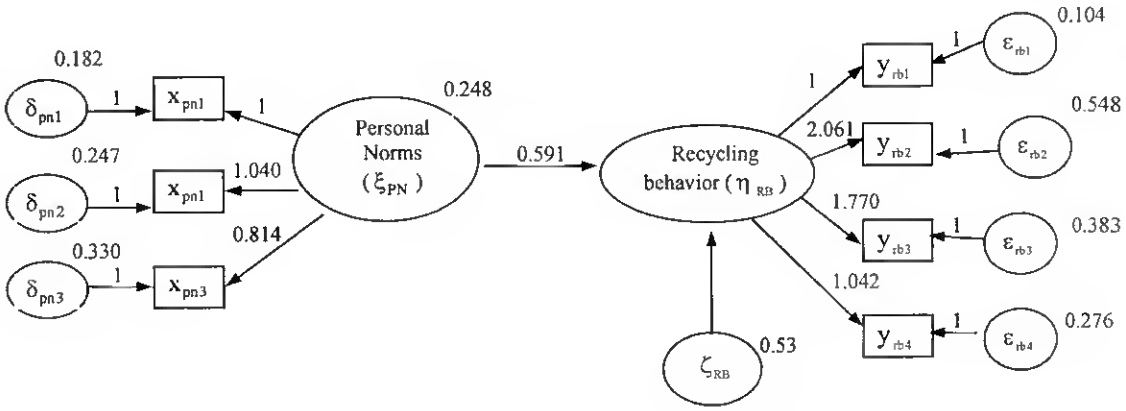
The path diagram for the comprehensive structural model of recycling behavior using the LISREL notation (*)



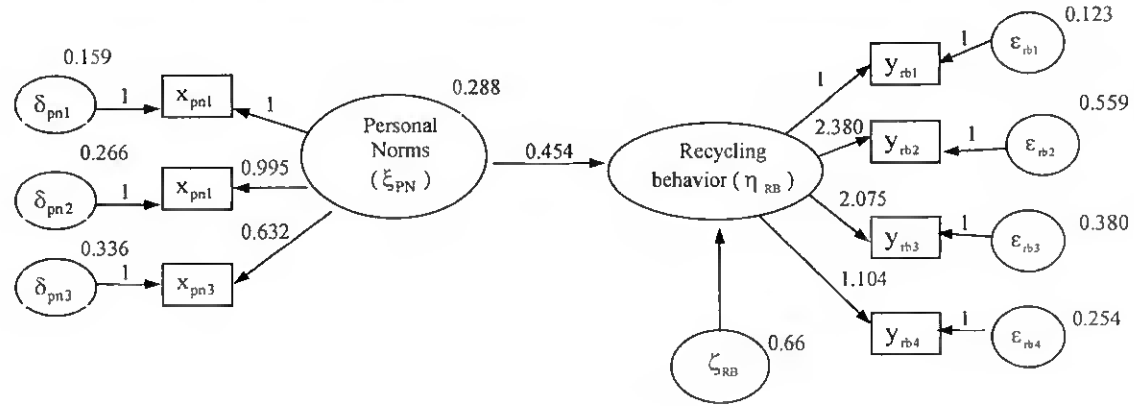
(*) Due to the sake of parsimony in representing the model, the correlations among the exogenous latent variables (personal norms, subjective norms, communication and perceived behavior control) were not depicted in the figure. However, these correlations were considered when estimating the model and were represented in AMOS through curved arrows.

FIGURE D.2
Multi-group analysis
(Results from the unrestricted model using the LISREL notation) (*)

Group 1: Participants with stronger attitude towards recycling (Unstandardized estimates)



Group 2: Participants with weaker attitude towards recycling (Unstandardized estimates)



(*) N_{GROUP1} = 502, N_{GROUP2} = 496. Chi-square = 116.526 (p = 0.000), GFI = 0.997, RMSEA = 0.059, AGFI = 0.994, NFI = 0.877, TLI = 0.838, IFI = 0.902, PNFI = 0.543, Normed Chi-square = 4.482.

Appendix E

ADDITIONAL ELEMENTS FROM THE APPLICATION OF DISCRIMINANT ANALYSIS

TABLE E.1
Measures of skewness and kurtosis

	Disposal Conditions	System Adequacy and Information	Disposal Containers Location
Skewness	-0.049	0.070	0.232
Standard error of Skewness	0.106	0.106	0.106
Z	-0.458	0.658	2.186
Kurtosis	-0.420	-0.428	-0.179
Standard error of Kusrtosis	0.211	0.211	0.211
Z	-2.018	-2.054	-0.891
Multivariate Kurtosis (Mardia)	0.615 (Standard error = 0.335; Z = 1.836)		

FIGURE E.1
Normal Q-Q for the variable Disposal Conditions

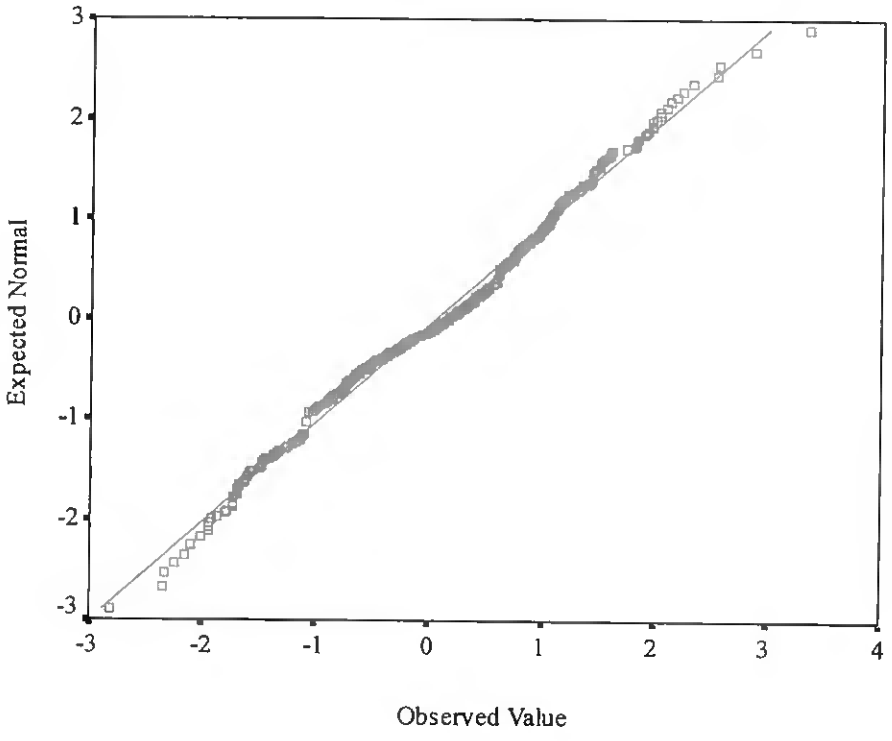


FIGURE E.2
Normal Q-Q for the variable System Adequacy and Information

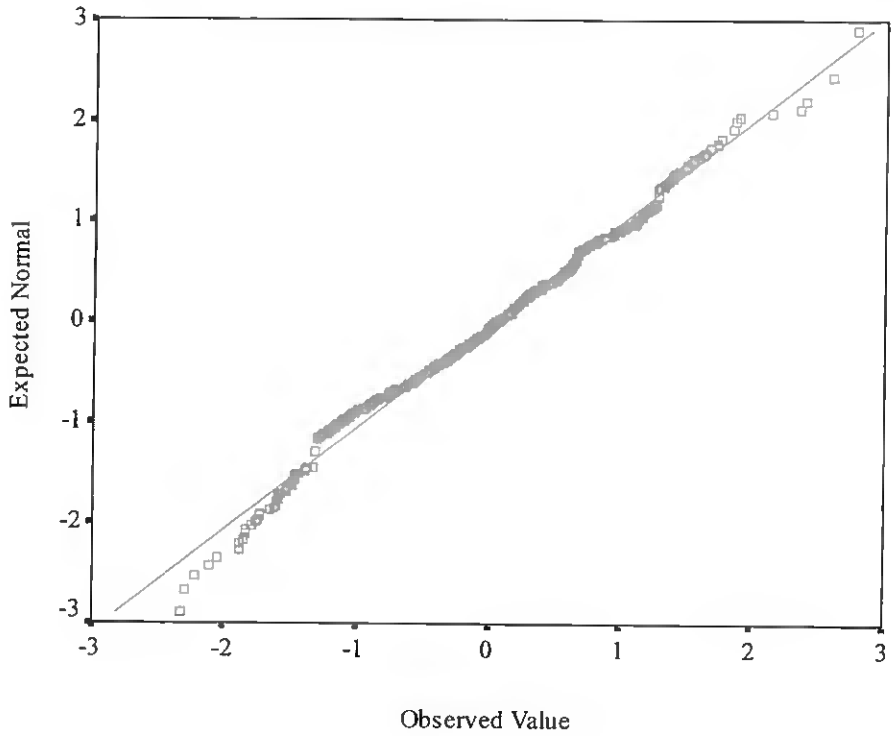


FIGURE E.3
Normal Q-Q for the variable Disposal Containers Location

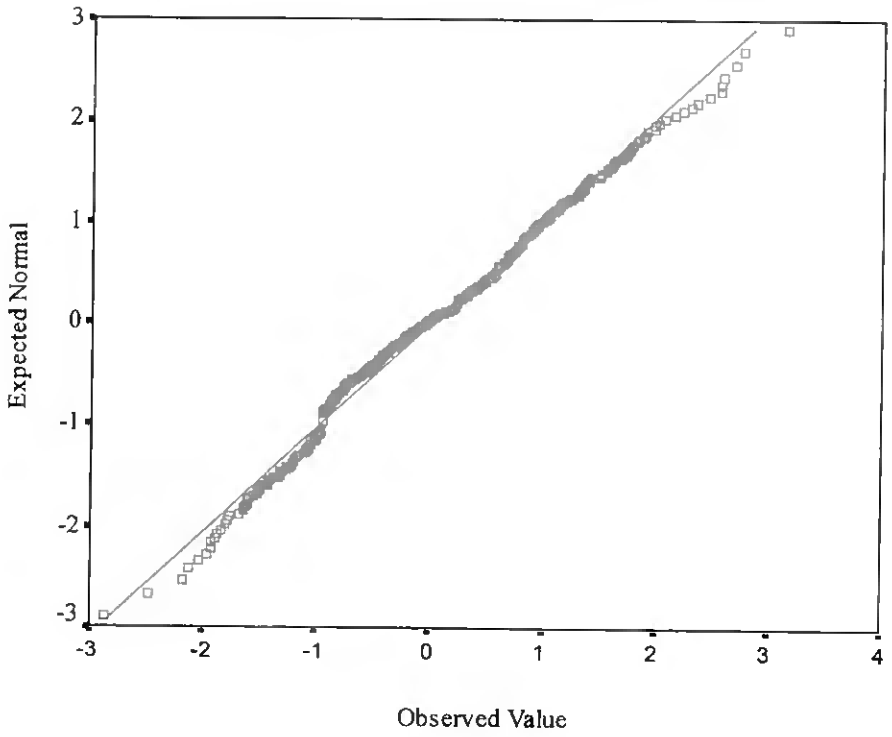


TABLE E.2
Box's M test

Results from Box's M test	
Box's M	8.8
F Approx.	1.457
df1	6
df2	1637016
p	0.188

TABLE E.3
Correlation matrix between each pair of discriminant variables

Discriminant Variables	1	2	3
1 - Disposal conditions	1	0.008	0.02
2 - System adequacy and information	0.008	1	0.06
3 - Disposal containers location	0.02	0.06	1

TABLE E.4
Wilks' Lambda test to the significance of the discriminant function

Test of Function	Wilks' Lambda	Chi-square	df	p
1	0.859	80.85	3	0.000

TABLE E.5
Centroids and optimal cutting point

Group	Centroids	Priori number of cases in each group	Optimal Cutting Point
Non-participants	-0.471	227	0
Participants	0.347	308	

TABLE E.6
Classification matrices

Type of Sample	Original Group	Predicted Group		Total
		G1	G2	
Analysis Sample	Non-participants (G1)	118	109	227
	Participants (G2)	62	246	308
	Non-participants (G1) (%)	52.0	48.0	100.0
	Participants (G2) (%)	20.1	79.9	100.0
Holdout Sample	Non-participants (G1)	129	113	242
	Participants (G2)	61	231	292
	Non-participants (G1) (%)	53.3	46.7	100.0
	Participants (G2) (%)	20.9	79.1	100.0

TABLE E.7
Validating the discriminant analysis

Type of Sample	Hit ratio	Classification by Chance Criteria		Press's Q	Huberty's Test			PSI
		Maximum Chance	Proportional Chance		G1	G2	Total	
Analysis Sample	68%	57.6%	51.2%	69.62 (p = 0.000)	2.911	7.918	7.816	34.7%
Holdout Sample	66.3%			56.7 (p = 0.000)	2.496	8.385	7.847	32.6%

TABLE E.8
Unstandardized coefficients

Discriminant Variables	Function
Disposal conditions	0.267
System adequacy and information	0.619
Disposal containers location	0.824
Constant	-0.069

TABLE E.9
Standardized coefficients

Discriminant Variables	Function
Disposal containers location	0.770
System adequacy and information	0.592
Disposal conditions	0.270

Appendix F

ADDITIONAL ELEMENTS FROM THE APPLICATION OF HOMALS

TABLE F.1
Initial Chi-square independence tests

Variables in Crosstab	Pearson Chi-square Value	df	Asymp. p (2-signed)
Mailing *versus* Adherence level	17.468	2	0.000
Leaflets *versus* Adherence level	23.168	2	0.000
Magazines *versus* Adherence level	14.353	2	0.001
Billboards *versus* Adherence level	8.713	2	0.013
Municipal or regional newspapers *versus* Adherence level	23.754	2	0.000
National daily newspapers *versus* Adherence level	13.058	2	0.001
Radio *versus* Adherence level	6.480	2	0.039
Ecopoints *versus* Adherence level	18.060	2	0.000
TV *versus* Adherence level	5.631	2	0.060

TABLE F.2
Distribution of respondents by the set of variables

Variables	Codes (*)				Total
	1	2	3	4	
Adherence level	644	995	257	197	2093
Information through mailing	343	1453	297	----	2093
Information through leaflets	277	1480	336	----	2093
Information through magazines	560	1190	343	----	2093
Information through billboards	555	1165	373	----	2093
Information through municipal or regional newspapers	680	1078	335	----	2093
Information through national daily newspapers	646	1086	361	----	2093
Information through radio	787	959	347	----	2093
Information placed in "Ecopoints"	748	964	381	----	2093
Information through TV	1443	419	231	----	2093

(*) Meaning of codes for the variable "Adherence level": 1 – totally adherent, 2 – partially adherent, 3 – non-adherent, 4 – non-answer; Meaning of codes for the variables measuring the reception of information through the media: 1 – yes, 2 – no, 3 – non-answer.

TABLE F.3
Possible dimensions and eigenvalues

Dimensions	Eigenvalues
1	0.305
2	0.132
3	0.114
4	0.107
5	0.093
6	0.089
7	0.076
8	0.075
9	0.066
10	0.054

Appendix G

ELEMENTS FROM THE MISSING VALUES ANALYSIS

(Chapters 4 and 6)

TABLE G.1
Univariate Statistics
(Items measuring general environmental attitudes)

Items measuring general environmental attitudes	N		
	Valid	Missing	
		Count	Percent
1 – Humans are severely abusing the environment	2053	40	1.9
2 – To maintain a healthy economy, we will have to develop a "steady-state" economy where industrial growth is controlled	2008	85	4.1
3 – The balance of nature is very delicate and easily upset	2035	58	2.8
4 – People must live in harmony with nature to survive	2066	27	1.3
5 – When people interfere with nature, it often produces disastrous consequences	2049	44	2.1
6 – There are limits to growth beyond which our industrialized society cannot expand	1981	112	5.4
7 – I feel incapable to act in the environmental problems resolution attempt	2038	55	2.6
8 – I don't have a complete knowledge to act consciously in the environmental problems resolution	2034	59	2.8
9 – The environment deterioration will proceed and only afterwards something can be done	2016	77	3.7
10 – We are approaching the limit of the number of people the earth can support	1976	117	5.6
11 – Solving environmental problems will require significant lifestyle changes	2053	40	1.9
12 – Science and technology will solve our problems in the next 20 years	1998	95	4.5
13 – People have the right to modify the natural environment to suit their needs	2038	55	2.6

TABLE G.2
Tabulated missing values patterns [a]
(Items measuring general environmental attitudes)

Number of Cases	Items measuring general environmental attitudes												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
31						X							
28										X			

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE G.3
Correlations of valid / missing dichotomous variables
(Items measuring general environmental attitudes)

Other Variables	Items measuring general environmental attitudes (Valid / Missing)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Recycling behavior (*) (Valid / Missing)													
Spearman correlation	0.150	0.125	0.123	0.092	0.085	0.130	0.190	0.180	0.136	0.082	0.107	0.122	0.116
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093
Gender (Valid / Missing)													
Spearman correlation	0.159	0.117	0.056	0.065	0.033	0.084	0.152	0.193	0.138	0.115	0.099	0.127	0.091
p (2-tailed)	0.000	0.000	0.011	0.003	0.132	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093
Age (Valid / Missing)													
Spearman correlation	0.163	0.117	0.060	0.075	0.040	0.077	0.154	0.194	0.147	0.113	0.105	0.126	0.085
p (2-tailed)	0.000	0.000	0.006	0.001	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE G.3 (Cont.)
Correlations of valid / missing dichotomous variables
(Items measuring general environmental attitudes)

Other Variables	Items measuring general environmental attitudes (Valid / Missing)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Education (Valid / Missing)													
Spearman correlation	0.076	0.048	0.008	0.027	0.004	0.010	0.060	0.061	0.019	0.011	0.020	0.029	-0.01
p (2-tailed)	0.001	0.028	0.703	0.221	0.848	0.635	0.006	0.006	0.383	0.616	0.360	0.185	0.610
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093
Income (Valid / Missing)													
Spearman correlation	0.116	0.100	0.093	0.040	0.054	0.103	0.153	0.157	0.109	0.111	0.072	0.130	0.077
p (2-tailed)	0.000	0.000	0.000	0.068	0.013	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093

TABLE G.4
Correlations between valid / missing dichotomous variables and some variables of interest (Items measuring general environmental attitudes)

Other Variables	Items measuring general environmental attitudes (Valid / Missing)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Recycling behavior (*) (Valid / Missing)													
Spearman correlation	0.042	-0.00	0.022	-0.01	-0.01	0.016	0.044	0.021	0.014	-0.03	0.020	-0.01	-0.02
p (2-tailed)	0.062	0.943	0.341	0.639	0.533	0.472	0.053	0.349	0.536	0.201	0.368	0.750	0.350
N	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960
Gender (Valid / Missing)													
Spearman correlation	0.009	-0.00	-0.01	0.000	-0.01	-0.03	0.014	-0.02	0.000	-0.03	0.020	-0.02	-0.00
p (2-tailed)	0.684	0.975	0.643	0.992	0.731	0.206	0.541	0.483	0.990	0.136	0.387	0.511	0.896
N	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897
Age (Valid / Missing)													
Spearman correlation	-0.03	-0.11	-0.08	-0.00	-0.05	-0.06	-0.04	-0.04	-0.06	-0.08	-0.04	-0.09	-0.03
p (2-tailed)	0.168	0.000	0.000	0.927	0.039	0.005	0.077	0.068	0.010	0.001	0.096	0.000	0.218
N	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE G.4 (Cont.)
Correlations between valid / missing dichotomous variables and some variables of interest
(Items measuring general environmental attitudes)

Other Variables	Items measuring general environmental attitudes (Valid / Missing)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Education (Valid / Missing)													
Spearman correlation	0.091	0.148	0.125	0.084	0.049	0.151	0.099	0.080	0.095	0.103	0.130	0.102	0.034
p (2-tailed)	0.000	0.000	0.000	0.000	0.043	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.155
N	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735
Income (Valid / Missing)													
Spearman correlation	0.063	0.103	0.071	0.027	0.005	0.068	0.070	0.039	0.077	0.026	0.065	0.064	-0.00
p (2-tailed)	0.010	0.000	0.004	0.272	0.825	0.005	0.004	0.108	0.001	0.292	0.007	0.008	0.947
N	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685

FIGURE G.1
Profile of means of items measuring general environmental attitudes for recycler and non-recycler households
(Initial sample versus final samples used in Chapter 4)

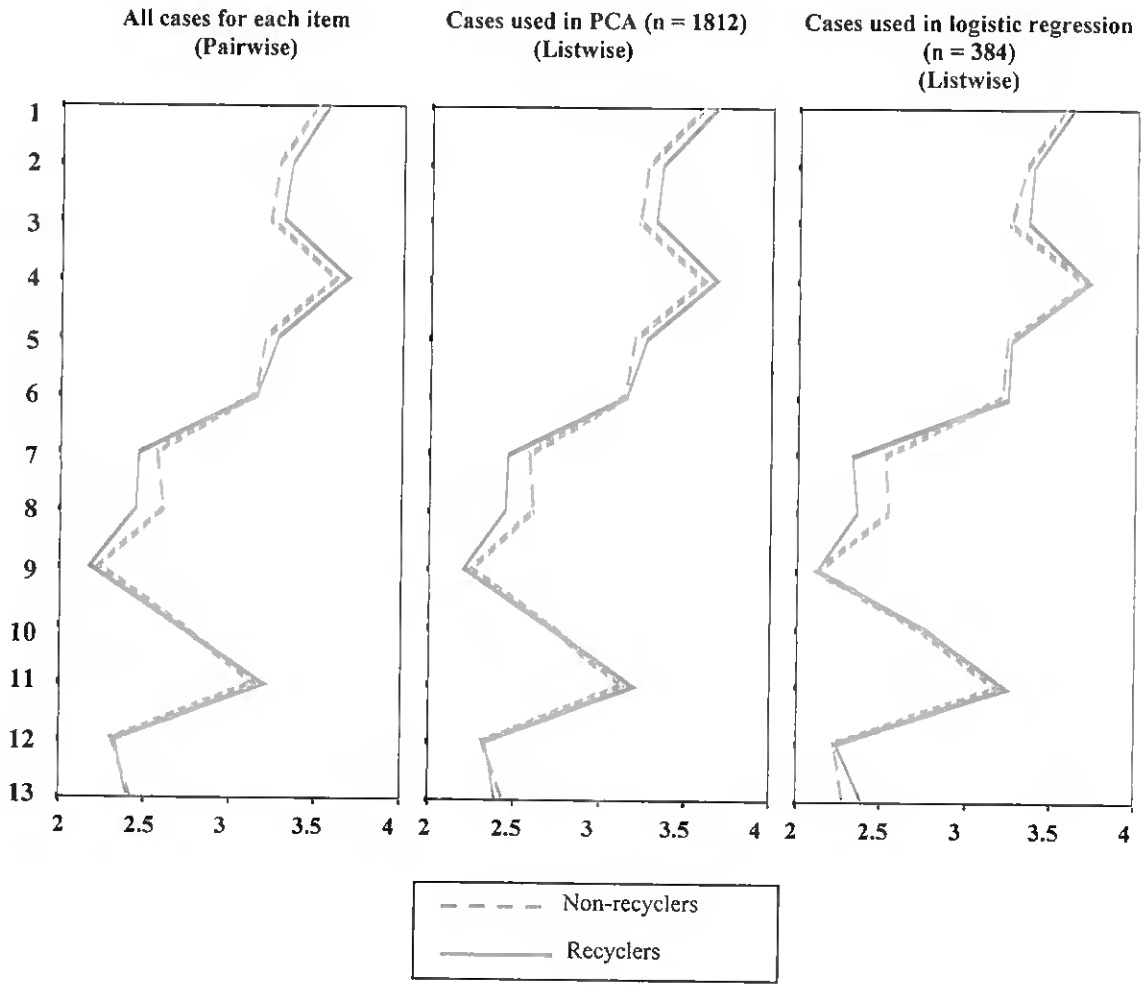


TABLE G.5
Univariate Statistics
(Items measuring specific attitudes towards recycling)

Items measuring specific attitudes towards recycling	N		
	Valid	Missing	
		Count	Percent
1 – My neighbors expect me to recycle household materials	1992	101	4.8
2 – My friends expect me to recycle household materials	2005	88	4.2
3 – I expect that my friends recycle household materials	2034	59	2.8
4 – I expect that my neighbors recycle household materials	2022	71	3.4
5 – My family expects me to recycle frequently my household materials	1997	96	4.6
6 – Household recycling is a major way to reduce lavishness	2035	58	2.8
7 – Household recycling is a major way to reduce litter	2042	51	2.4
8 – Household recycling is a major way to conserve energy	1985	108	5.2
9 – Household recycling is a major way to reduce pollution	2045	48	2.3
10 – Household recycling is a major way to reduce the wasteful use of land for dumps	2006	87	4.2
11 – Household recycling is a major way to conserve natural resources	2018	75	3.6
12 – I feel a strong personal obligation to recycle a large proportion of my household's recyclables	2047	46	2.2
13 – I would feel guilty if I didn't recycle regularly my household's recyclables	2046	47	2.2
14 – I consider that the household waste separation should be compulsory by law	2031	62	3.0
15 – I am willing to go blocks out of my way to recycle household materials on a regular basis	2043	50	2.4
16 – For me, recycling is just a matter of money: I wouldn't recycle materials I didn't get paid for	2051	42	2.0
17 – For me, to recycle household waste is a very difficult task	2044	49	2.3
18 – Almost no one I know recycles any household materials	2057	36	1.7
19 – To recycle household waste is not up to me	2041	52	2.5
20 – Households like mine are responsible for a very large part of the materials disposed of in landfills	1992	101	4.8

TABLE G.6
Tabulated missing values patterns [a]
(Items measuring specific attitudes towards recycling)

N° of Cases	Items measuring specific attitudes towards recycling																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
31																				X
28	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE G.7
Correlations of valid / missing dichotomous variables
(Items measuring specific attitudes towards recycling)

Other Variables	Items measuring specific attitudes towards recycling (Valid / Missing)																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Recycling behavior(*) (Valid / Missing)																				
Spearman correlation	0.09	0.08	0.17	0.16	0.15	0.19	0.21	0.12	0.22	0.17	0.16	0.19	0.21	0.17	0.20	0.19	0.20	0.13	0.19	0.19
p (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093
Gender (Valid / Missing)																				
Spearman correlation	0.09	0.09	0.11	0.13	0.15	0.18	0.15	0.13	0.18	0.17	0.15	0.15	0.14	0.13	0.13	0.15	0.14	0.12	0.15	0.16
p (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093
Age (Valid / Missing)																				
Spearman correlation	0.09	0.09	0.12	0.13	0.16	0.18	0.15	0.13	0.18	0.17	0.15	0.16	0.15	0.13	0.13	0.17	0.14	0.13	0.15	0.16
p (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?" , which has two valid answers: *yes* and *no*.

TABLE G.7 (Cont.)
Correlation matrix of valid / missing dichotomous variables
(Items measuring specific attitudes towards recycling)

Other Variables	Items measuring specific attitudes towards recycling (Valid / Missing)																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Education (Valid / Missing)																				
Spearman correlation	0.03	0.02	0.05	0.06	0.00	0.06	0.07	0.05	0.08	0.05	0.06	0.05	0.07	0.06	0.05	0.0	0.07	0.04	0.07	0.05
p (2-tailed)	0.20	0.39	0.04	0.01	0.87	0.00	0.00	0.03	0.00	0.04	0.00	0.02	0.00	0.01	0.01	0.02	0.00	0.09	0.00	0.04
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093
Income (Valid / Missing)																				
Spearman correlation	0.09	0.09	0.09	0.11	0.11	0.12	0.11	0.15	0.13	0.11	0.11	0.11	0.12	0.12	0.11	0.11	0.13	0.07	0.12	0.16
p (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093

TABLE G.8
Correlations between valid / missing dichotomous variables and some variables of interest
(Items measuring specific attitudes towards recycling)

Other Variables	Items measuring specific attitudes towards recycling (Valid / Missing)																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Recycling behavior (*) **(Valid / Missing)**																				
Spearman correlation	-0.03	-0.02	0.03	0.02	0.03	0.01	0.01	0.00	0.02	0.00	0.03	0.04	0.04	0.02	0.06	0.04	0.01	-0.01	0.05	0.01
p (2-tailed)	0.16	0.29	0.28	0.48	0.19	0.55	0.72	0.88	0.37	0.99	0.16	0.07	0.09	0.43	0.01	0.09	0.59	0.90	0.03	0.54
N	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960
Gender (Valid / Missing)																				
Spearman correlation	-0.03	-0.04	-0.04	-0.04	-0.05	-0.06	-0.06	-0.07	-0.04	-0.06	-0.05	-0.03	-0.02	-0.03	-0.01	-0.01	-0.04	-0.03	-0.03	-0.07
p (2-tailed)	0.22	0.06	0.12	0.09	0.04	0.01	0.01	0.01	0.07	0.01	0.02	0.26	0.33	0.19	0.83	0.74	0.11	0.18	0.19	0.01
N	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897
Age (Valid / Missing)																				
Spearman correlation	-0.08	-0.09	-0.06	-0.05	-0.03	-0.04	-0.03	-0.04	-0.04	-0.07	-0.03	-0.05	-0.04	-0.04	-0.03	-0.04	-0.03	-0.07	-0.04	-0.06
p (2-tailed)	0.00	0.00	0.01	0.02	0.15	0.12	0.15	0.09	0.08	0.01	0.15	0.04	0.11	0.06	0.26	0.06	0.18	0.00	0.07	0.02
N	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?" , which has two valid answers: *yes* and *no*.

TABLE G.8 (Cont.)
Correlations between valid / missing dichotomous variables and some variables of interest
(Items measuring specific attitudes towards recycling)

Other Variables	Items measuring specific attitudes towards recycling (Valid / Missing)																			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Education (Valid / Missing)																				
Spearman correlation	0.09	0.11	0.12	0.10	0.09	0.13	0.12	0.11	0.12	0.13	0.12	0.12	0.12	0.11	0.15	0.14	0.12	0.12	0.14	0.12
p (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735
Income (Valid / Missing)																				
Spearman correlation	0.03	0.04	0.07	0.04	0.07	0.06	0.07	0.05	0.06	0.10	0.05	0.07	0.08	0.06	0.12	0.09	0.09	0.09	0.09	0.09
p (2-tailed)	0.25	0.13	0.01	0.14	0.01	0.01	0.01	0.04	0.01	0.00	0.03	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
N	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685

FIGURE G.2
Profile of means of items measuring specific attitudes towards recycling for recycler and non-recycler households
(Initial sample versus final samples used in Chapter 4)

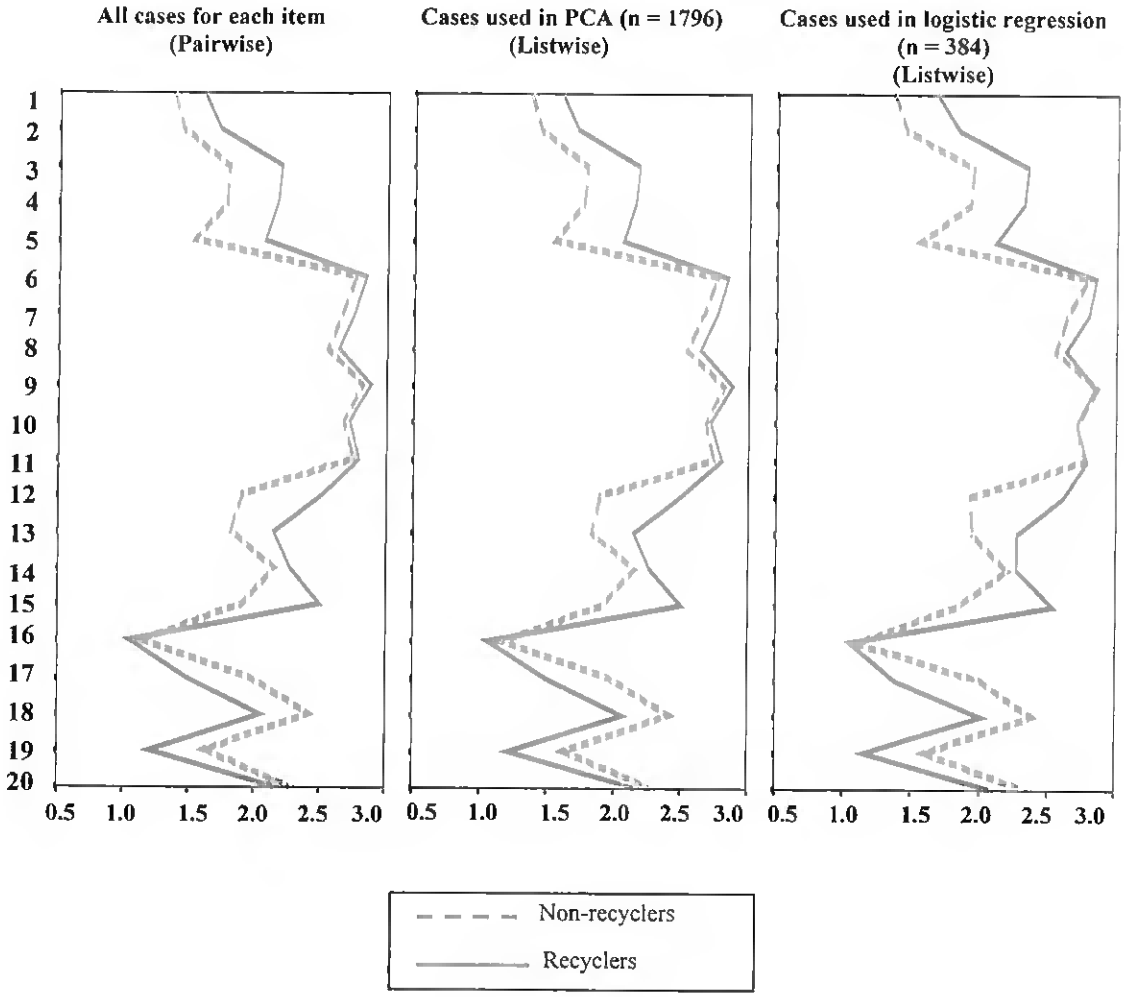


TABLE G.9
Univariate Statistics
(Items measuring logistics service satisfaction)

Items measuring logistics service satisfaction	N		
	Valid	Missing	
		Count	Percent
1 – Frequency of waste collection	1278	815	38.9
2 – Emptying regularity	1325	768	36.7
3 – Cleaning and maintenance	1321	772	36.9
4 – Local safety	1302	791	37.8
5 – Number of disposal containers	1390	703	33.6
6 – Information availability	1612	481	23.0
7 – Support and claim service	1529	564	26.9
8 – System adequacy to lifestyle	1550	543	25.9
9 – Number and type of accepted waste materials	1349	744	35.5
10 – Distance to the disposal containers	1438	655	31.3
11 – Disposal containers location	1382	711	34.0

TABLE G.10
Tabulated missing values patterns [a]
(Items measuring logistics service satisfaction)

Number of Cases	Items measuring logistics service satisfaction										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
36									X		
24							X				
565	X	X	X	X	X	X	X	X	X	X	X

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE G.11
Correlation matrix of valid / missing dichotomous variables
(Items measuring logistics service satisfaction)

Other Variables	Items measuring logistics service satisfaction (Valid / Missing)										
	1	2	3	4	5	6	7	8	9	10	11
Recycling behavior(*) (Valid / Missing)											
Spearman correlation	0.121	0.139	0.134	0.136	0.147	0.142	0.120	0.132	0.142	0.158	0.148
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093
Gender (Valid / Missing)											
Spearman correlation	0.076	0.075	0.077	0.078	0.087	0.125	0.112	0.109	0.090	0.105	0.085
p (2-tailed)	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093
Age (Valid / Missing)											
Spearman correlation	0.084	0.087	0.086	0.089	0.101	0.132	0.121	0.112	0.099	0.119	0.098
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE G.11 (Cont.)
Correlation matrix of valid / missing dichotomous variables
(Items measuring logistics service satisfaction)

Other Variables	Items measuring logistics service satisfaction (Valid / Missing)										
	1	2	3	4	5	6	7	8	9	10	11
Education (Valid / Missing)											
Spearman correlation	0.048	0.060	0.060	0.041	0.064	0.108	0.096	0.102	0.068	0.077	0.063
p (2-tailed)	0.027	0.006	0.006	0.060	0.003	0.000	0.000	0.000	0.002	0.000	0.004
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093
Income (Valid / Missing)											
Spearman correlation	0.107	0.116	0.109	0.119	0.097	0.115	0.122	0.121	0.131	0.113	0.100
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093	2093

TABLE G.12
Correlations between valid / missing dichotomous variables and some variables of interest (Items measuring logistics service satisfaction)

Other Variables	Items measuring logistics service satisfaction (Valid / Missing)										
	1	2	3	4	5	6	7	8	9	10	11
Recycling behavior (*) (Valid / Missing)											
Spearman correlation	0.056	0.059	0.058	0.052	0.036	0.050	0.051	0.061	0.043	0.042	0.051
p (2-tailed)	0.012	0.009	0.010	0.021	0.111	0.026	0.025	0.007	0.058	0.064	0.024
N	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960
Gender (Valid / Missing)											
Spearman correlation	-0.015	0.001	0.003	-0.001	-0.002	0.022	0.016	0.027	-0.001	0.012	0.013
p (2-tailed)	0.527	0.970	0.895	0.948	0.929	0.338	0.498	0.242	0.960	0.600	0.585
N	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897	1897
Age (Valid / Missing)											
Spearman correlation	-0.153	-0.159	-0.154	-0.160	-0.173	-0.188	-0.181	-0.200	-0.211	-0.176	-0.170
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884	1884

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE G.12 (Cont.)
Correlations between valid / missing dichotomous variables and some variables of interest (Items measuring logistics service satisfaction)

Other Variables	Items measuring logistics service satisfaction (Valid / Missing)										
	1	2	3	4	5	6	7	8	9	10	11
Education (Valid / Missing)											
Spearman correlation	0.147	0.161	0.157	0.166	0.187	0.184	0.146	0.212	0.223	0.191	0.164
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735	1735
Income (Valid / Missing)											
Spearman correlation	0.057	0.058	0.064	0.070	0.071	0.089	0.043	0.100	0.093	0.064	0.050
p (2-tailed)	0.020	0.018	0.009	0.004	0.004	0.000	0.078	0.000	0.000	0.009	0.040
N	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685	1685

FIGURE G.3
Profile of means of items measuring specific logistics service satisfaction for recycler and non-recycler households
(Initial sample versus final samples used in Chapter 4)

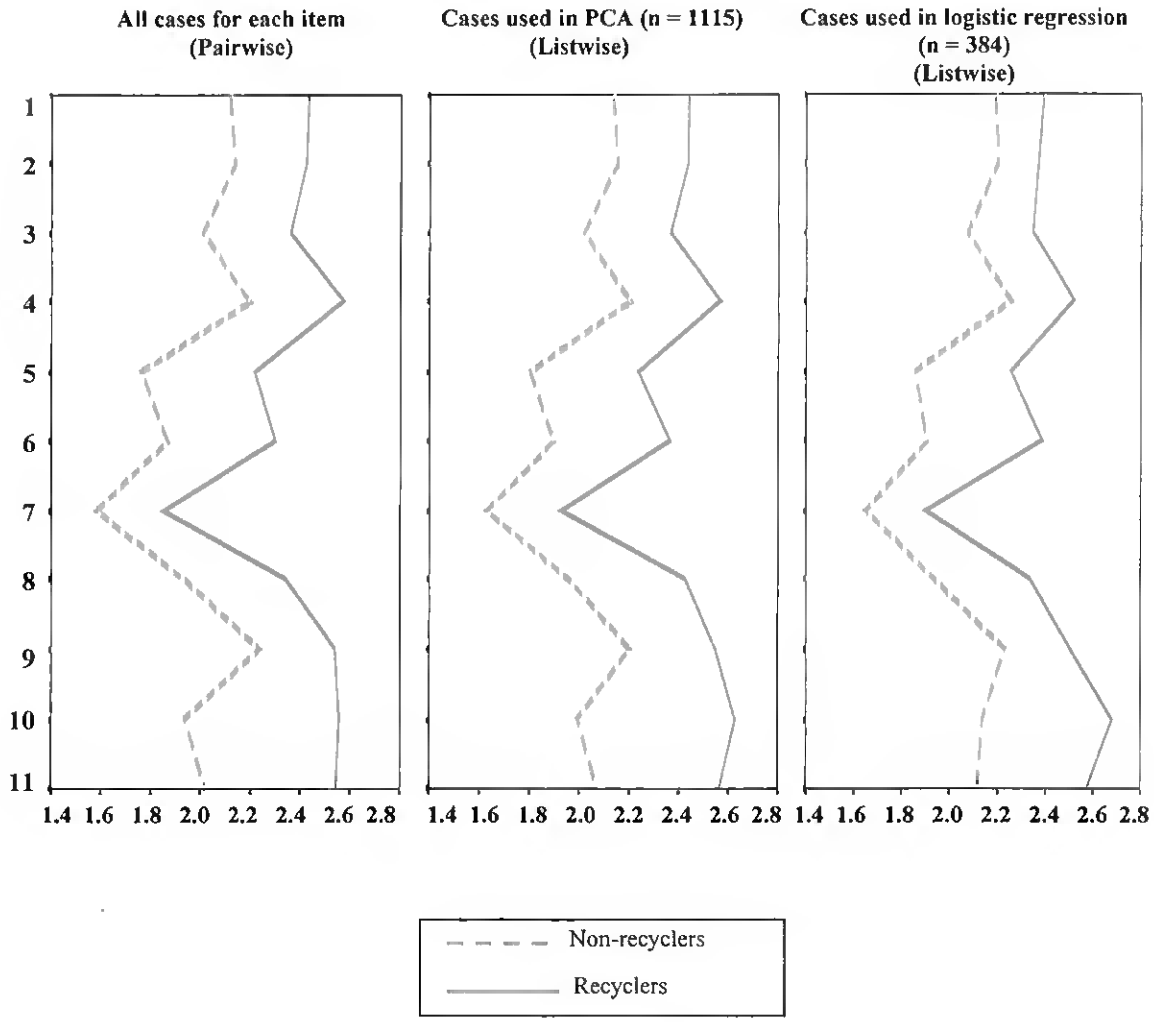


FIGURE G.4
Profile of means of items measuring specific logistics service satisfaction for recycler and non-recycler households
(Initial sample versus final sample used in Chapter 6)

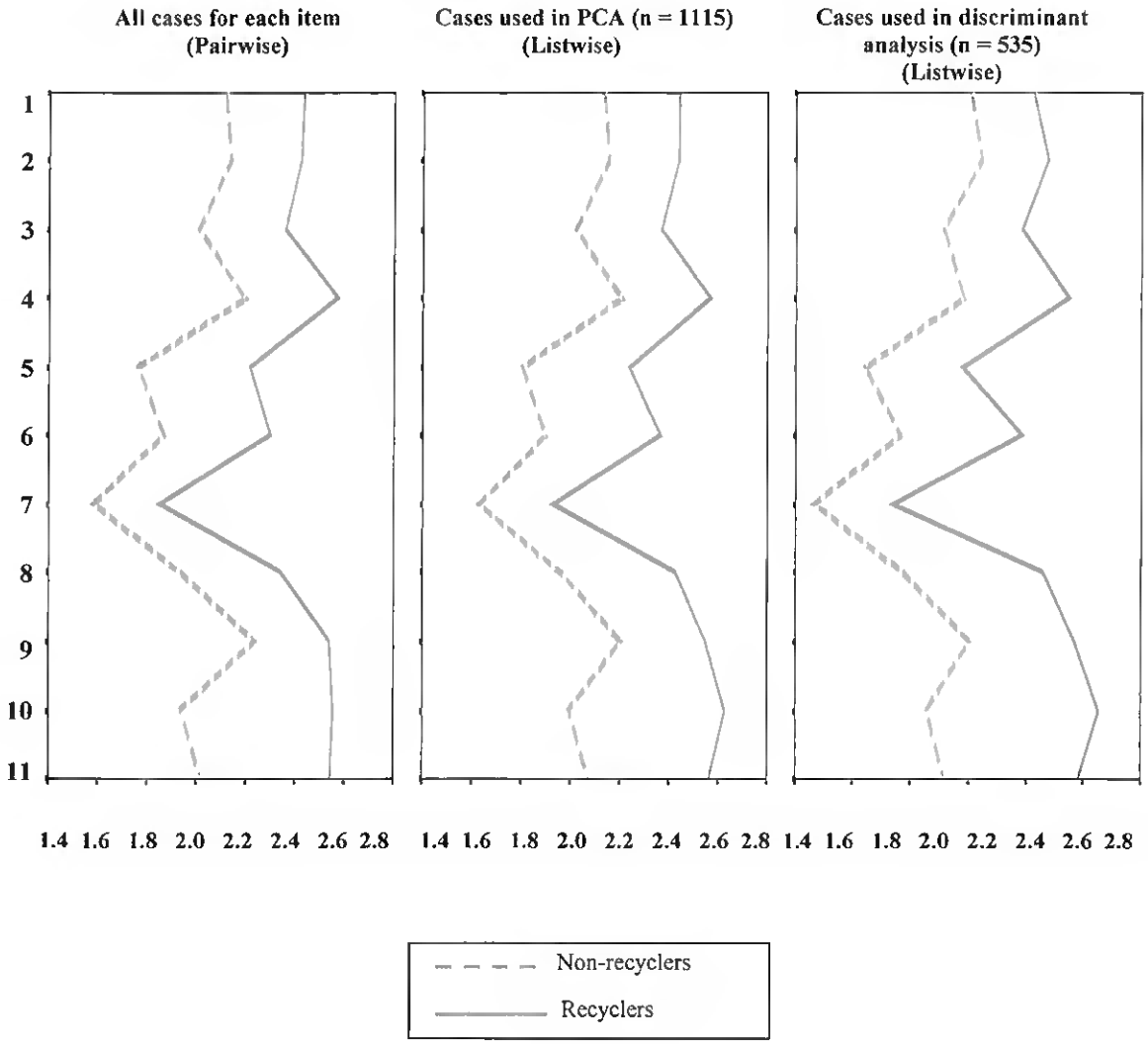


TABLE G.13
Univariate Statistics
(Other variables used in Chapter 4)

Other variables used in Chapter 4	N		
	Valid	Missing	
		Count	Percent
1 – The household usually separates and disposes of recyclable materials?	1960	133	6.4
2 – Space to store	1136	957	45.7
3 – Gender	1897	196	9.4
4 – Age	1884	209	10.0
5 – Education	1735	358	17.1
6 – Income	1685	408	19.5

TABLE G.14
Tabulated missing values patterns [a]
(Other variables used in Chapter 4)

Number of Cases	Other variables used in Chapter 4					
	1	2	3	4	5	6
555		X				
31			X	X		
27		X	X	X		X
36			X	X		X
104						X
95						X
65	X					
24					X	X
103					X	
26		X			X	X
38		X	X	X	X	X

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE G.15
Correlations of valid / missing dichotomous variables
(Other variables used in Chapter 4)

Other Variables	Other variables used in Chapter 4 (Valid / Missing)					
	1	2	3	4	5	6
Recycling behavior (*) **(Valid / Missing)**						
Spearman correlation	1	0.099	0.084	0.083	0.121	0.094
p (2-tailed)	------	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093
Gender (Valid / Missing)						
Spearman correlation	0.084	0.074	1	0.233	0.168	0.384
p (2-tailed)	0.000	0.001	------	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093
Age (Valid / Missing)						
Spearman correlation	0.083	0.072	0.233	1	0.175	0.387
p (2-tailed)	0.000	0.001	0.000	------	0.000	0.000
N	2093	2093	2093	2093	2093	2093
Education (Valid / Missing)						
Spearman correlation	0.121	0.118	0.168	0.175	1	0.174
p (2-tailed)	0.000	0.000	0.000	0.000	------	0.000
N	2093	2093	2093	2093	2093	2093
Income (Valid / Missing)						
Spearman correlation	0.094	0.093	0.384	0.387	0.174	1
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	------
N	2093	2093	2093	2093	2093	2093

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE G.16
Correlations between valid / missing dichotomous variables and some variables of interest
(Other variables used in Chapter 4)

Other Variables	Other variables used in Chapter 4 (Valid / Missing)					
	1	2	3	4	5	6
Recycling behavior (*)						
Spearman correlation	(a)	0.042	0.035	0.036	0.011	0.008
p (2-tailed)	------	0.064	0.119	0.109	0.623	0.734
N	1960	1960	1960	1960	1960	1960
Gender						
Spearman correlation	-0.004	-0.004	(a)	0.009	-0.057	-0.035
p (2-tailed)	0.849	0.872	------	0.690	0.013	0.126
N	1897	1897	1897	1897	1897	1897
Age						
Spearman correlation	-0.091	-0.086	0.007	(a)	0.038	0.059
p (2-tailed)	0.000	0.000	0.767	------	0.098	0.010
N	1884	1884	1884	1884	1884	1884
Education						
Spearman correlation	0.073	0.147	-0.002	0.015	(a)	-0.071
p (2-tailed)	0.002	0.000	0.949	0.532	------	0.003
N	1735	1735	1735	1735	1735	1735
Income						
Spearman correlation	0.073	0.123	0.027	0.024	0.027	(a)
p (2-tailed)	0.003	0.000	0.269	0.320	0.269	------
N	1685	1685	1685	1685	1685	1685

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

(a) Cannot be computed because at least one of the variables is constant.

TABLE G.17
Frequency distributions of each additional variable used in Chapter 4 in the initial sample and in the sample used to apply logistic regression

Other variables used in Chapter 4	Distribution of all valid cases for the item (Initial sample size)		Distribution of cases used in logistic regression (n = 384)	
	Frequency	Valid Percent	Frequency	Valid Percent
1 – Recycling behavior (*)				
0 – No	886	45.2	166	43.2
1 – Yes	1074	54.8	218	56.8
Total number of valid answers	1960	100.0	384	100.0
2 – Space to store				
0 – No	750	66.0	244	63.5
1 – Yes	386	34.0	140	36.5
Total number of valid answers	1136	100.0	384	100.0
3 – Gender				
0 – Male	666	35.1	149	38.8
1 – Female	1231	64.9	235	61.2
Total number of valid answers	1897	100.0	384	100.0
4 – Age				
14 – 25	503	26.7	128	33.3
26 – 35	431	22.9	109	28.4
36 – 45	394	20.9	75	19.5
46 – 55	301	16	43	11.2
56 – 65	132	7	14	3.6
66 – 94	123	6.5	15	3.9
Total number of valid answers	1884	100.0	384	100.0

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE G.17 (Cont.)
Frequency distributions of each additional item used in Chapter 4 in the initial sample and in the sample used to apply logistic regression

Other variables used in Chapter 4	Distribution of all valid cases for the item (Initial sample size)		Distribution of cases used in logistic regression (n = 384)	
	Frequency	Valid Percent	Frequency	Valid Percent
5 – Education				
4 years	242	13.9	49	12.8
6 years	100	5.8	16	4.2
9 years	161	9.3	34	8.9
12 years	360	20.7	59	15.4
Technical / Professional	217	12.5	23	6
College or higher	655	37.7	90	23.4
Total number of valid answers	1735	100.0	384	100.0
6 – Income				
Less than 324 €	71	4.2	7	1.8
325 € – 499 €	159	9.4	27	7.0
500 € – 999 €	541	32.1	120	31.3
1000 € – 1999 €	582	34.5	149	38.8
2000 € – 2999 €	209	12.4	50	13.0
At least 3000 €	123	7.3	31	8.1
Total number of valid answers	1685	100.0	384	100.0

Appendix H

ELEMENTS FROM THE MISSING VALUES ANALYSIS (Chapter 5)

TABLE H.1
Univariate Statistics
(Items measuring the latent variable Recycling Behavior (RB))

Items measuring the latent variable RB	N		
	Valid	Missing	
		Count	Percent
RB1 – The household usually separates and disposes of recyclable materials?	1960	133	6.4
RB2 – Frequency of separation and disposal of recyclable materials at the "Ecopoint" container	1592	501	23.9
RB3 – Frequency of separation and disposal of recyclable materials at the glass container	1681	412	19.7
RB4 – Adherence level to separation and disposal of recyclable materials	1896	197	9.4

TABLE H.2
Tabulated missing values patterns [a]
(Items measuring the latent variable Recycling Behavior (RB))

Number of Cases	Items measuring the latent variable RB			
	RB1	RB2	RB3	RB4
90				X
28		X		X
221		X		
151		X	X	
151			X	
33	X	X	X	X
43	X			
37	X	X	X	

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE H.3
Correlations of valid / missing dichotomous variables
(Items measuring the latent variable Recycling Behavior (RB))

Other Variables	Items measuring the latent variable RB (Valid / Missing)			
	RB1	**RB2**	**RB3**	**RB4**
Recycling behavior (*) **(Valid / Missing)**				
Spearman correlation	1.000	0.230	0.236	0.204
p (2-tailed)	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093
Gender **(Valid / Missing)**				
Spearman correlation	0.084	0.046	0.084	0.250
p (2-tailed)	0.000	0.034	0.000	0.000
N	2093	2093	2093	2093
Age **(Valid / Missing)**				
Spearman correlation	0.083	0.041	0.068	0.247
p (2-tailed)	0.000	0.061	0.002	0.000
N	2093	2093	2093	2093
Education **(Valid / Missing)**				
Spearman correlation	0.121	0.069	0.062	0.166
p (2-tailed)	0.000	0.002	0.004	0.000
N	2093	2093	2093	2093
Income **(Valid / Missing)**				
Spearman correlation	0.094	0.069	0.069	0.226
p (2-tailed)	0.000	0.002	0.002	0.000
N	2093	2093	2093	2093

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE H.4
Correlations between valid / missing dichotomous variables and some variables of interest
(Items measuring the latent variable Recycling Behavior (RB))

Other Variables	Items measuring the latent variable RB (Valid / Missing)			
	RB1	**RB2**	**RB3**	**RB4**
Recycling behavior (*)				
Spearman correlation	------	-0.001	0.025	0.040
p (2-tailed)	------	0.964	0.269	0.080
N	------	1960	1960	1960
Gender				
Spearman correlation	-0.004	-0.019	-0.025	0.030
p (2-tailed)	0.849	0.414	0.270	0.192
N	1897	1897	1897	1897
Age				
Spearman correlation	-0.091	-0.119	-0.128	-0.032
p (2-tailed)	0.000	0.000	0.000	0.164
N	1884	1884	1884	1884
Education				
Spearman correlation	0.073	0.120	0.088	0.132
p (2-tailed)	0.002	0.000	0.000	0.000
N	1735	1735	1735	1735
Income				
Spearman correlation	0.073	0.034	0.016	0.078
p (2-tailed)	0.003	0.158	0.523	0.001
N	1685	1685	1685	1685

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE H.5
Frequency distributions of each item measuring the latent variable Recycling Behavior (RB) in the initial sample and in the sample used to apply SEM

Items measuring the latent variable RB	Distribution of all valid cases for the item (Initial sample size)		Distribution of cases used in SEM (n = 998)	
	Frequency	Valid Percent	Frequency	Valid Percent
RB1				
1 – No	886	45.2	439	44.0
2 – Yes	1074	54.8	559	56.0
Total number of valid answers	1960	100.0	998	100.0
RB2				
1 – Never	622	39.1	308	30.9
2 – sometimes	446	28.0	352	35.3
3 – 1 or 2 times a week	266	16.7	194	19.4
4 – 3 to 6 times a week	113	7.1	74	7.4
5 – every day	145	9.1	70	7.0
Total number of valid answers	1592	100.0	998	100.0
RB3				
1 – Never	397	23.6	204	20.4
2 – sometimes	710	42.2	421	42.2
3 – 1 or 2 times a week	357	21.2	258	25.9
4 – 3 to 6 times a week	120	7.1	79	7.9
5 – every day	97	5.8	36	3.6
Total number of valid answers	1681	100.0	998	100.0
RB4				
1 – totally adherent	257	13.6	132	13.2
2 – partially adherent	995	52.5	529	53.0
3 – nothing adherent	644	34.0	337	33.8
Total number of valid answers	1896	100.0	998	100.0

TABLE H.6
Univariate Statistics
(Items measuring the latent variable Attitude Towards Recycling (ATT))

Items measuring the latent variable ATT	N		
	Valid	Missing	
		Count	Percent
ATT1 – Household recycling is an important way to conserve natural resources × Importance of saving natural resources and the environment (less waste/pollution)	1590	503	24.0
ATT2 – Household recycling is an important way to conserve energy × Importance of saving natural resources and the environment	1562	531	25.4
ATT3 – Household recycling is an important way to reduce pollution × Importance of saving natural resources and the environment (less waste/pollution)	1609	484	23.1
ATT4 – Household recycling is an important way to reduce lavishness × Importance of saving natural resources and the environment	1602	491	23.5
ATT5 – Household recycling is an important way to reduce the amount of waste disposed at landfills × Importance of reducing the amount of waste disposed at landfills	1527	566	27.0

TABLE H.7
Tabulated missing values patterns [a]
(Items measuring the latent variable Attitude Towards Recycling (ATT))

Number of Cases	Items measuring the latent variable ATT				
	ATT1	ATT2	ATT3	ATT4	ATT5
78					X
24		X			
474	X	X	X	X	X

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE H.8
Correlations of valid / missing dichotomous variables
(Items measuring the latent variable Attitude Towards Recycling (ATT))

Other Variables	Items measuring the latent variable ATT (Valid / Missing)				
	ATT1	**ATT2**	**ATT3**	**ATT4**	**ATT5**
Recycling behavior (*) **(Valid / Missing)**					
Spearman correlation	0.128	0.123	0.136	0.133	0.141
p (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093
Gender (Valid / Missing)					
Spearman correlation	0.099	0.095	0.100	0.097	0.122
p (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093
Age (Valid / Missing)					
Spearman correlation	0.107	0.102	0.108	0.105	0.134
p (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093
Education (Valid / Missing)					
Spearman correlation	0.077	0.079	0.082	0.081	0.066
p (2-tailed)	0.000	0.000	0.000	0.000	0.002
N	2093	2093	2093	2093	2093
Income (Valid / Missing)					
Spearman correlation	0.116	0.132	0.122	0.120	0.143
p (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE H.9
Correlations between valid / missing dichotomous variables and some variables of interest
(Items measuring the latent variable Attitude Towards Recycling (ATT))

Other Variables	Items measuring the latent variable ATT (Valid / Missing)				
	ATT1	**ATT2**	**ATT3**	**ATT4**	**ATT5**
Recycling behavior (*)					
Spearman correlation	0.097	0.090	0.095	0.097	0.066
p (2-tailed)	0.000	0.000	0.000	0.000	0.004
N	1960	1960	1960	1960	1960
Gender					
Spearman correlation	-0.021	-0.026	-0.008	-0.015	-0.011
p (2-tailed)	0.360	0.256	0.727	0.528	0.617
N	1897	1897	1897	1897	1897
Age					
Spearman correlation	-0.153	-0.161	-0.160	-0.161	-0.173
p (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	1884	1884	1884	1884	1884
Education					
Spearman correlation	0.184	0.189	0.184	0.188	0.186
p (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	1735	1735	1735	1735	1735
Income					
Spearman correlation	0.134	0.134	0.140	0.139	0.134
p (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	1685	1685	1685	1685	1685

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

FIGURE H.1
Profile of means of items measuring the latent variable Attitude Towards Recycling (ATT) for recycler and non-recycler households

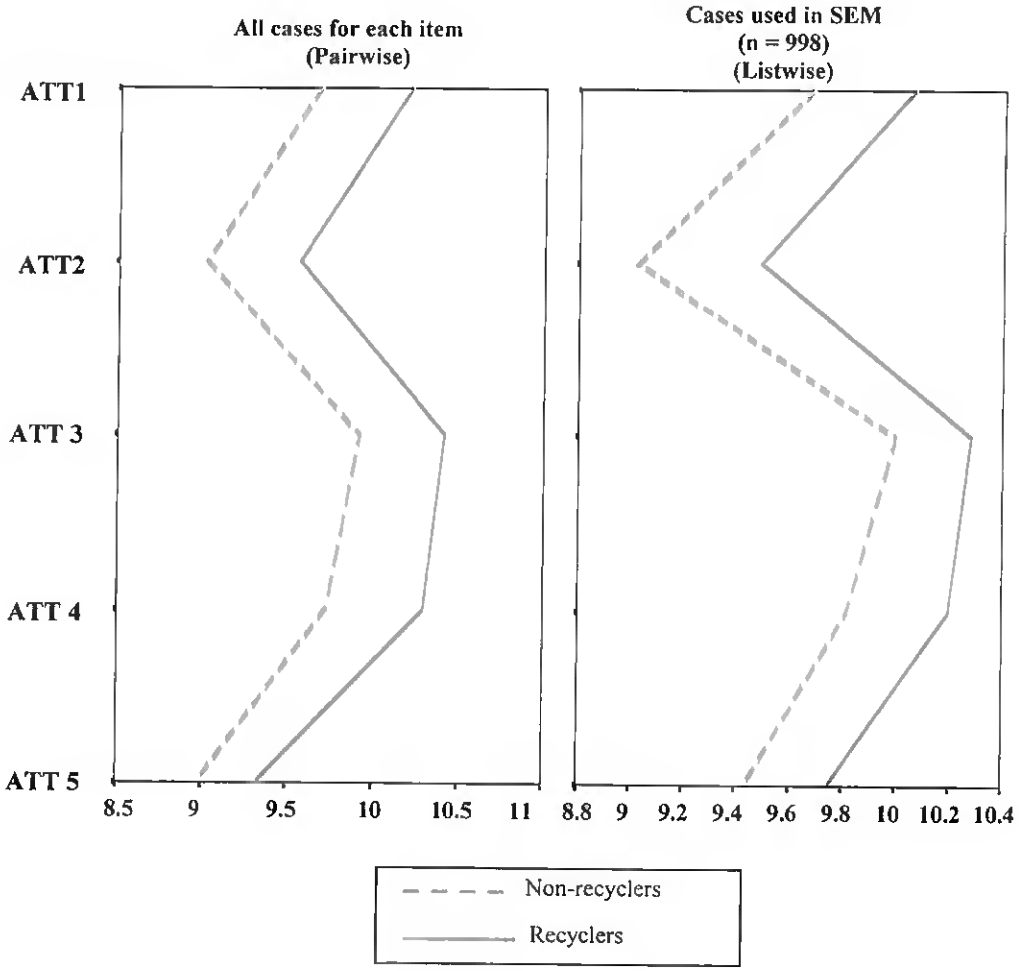


TABLE H.10
Univariate Statistics
(Items measuring the latent variable Subjective Norms (SN))

Items measuring the latent variable SN	N		
	Valid	Missing	
		Count	Percent
SN1 – My friends expect me to recycle household materials × Importance of friends' pressure as a reason to recycle	1572	521	24.9
SN1 – My neighbors expect me to recycle household materials × Importance of neighbors' pressure as a reason to recycle	1564	529	25.3
SN1 – My family expect me to recycle household materials × Importance of family's pressure as a reason to recycle	1488	605	28.9

TABLE H.11
Tabulated missing values patterns [a]
(Items measuring the latent variable Subjective Norms (SN))

Number of Cases	Items measuring the latent variable SN		
	SN1	SN 2	SN 3
107			X
24	X	X	
485	X	X	X

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE H.12
Correlations of valid / missing dichotomous variables
(Items measuring the latent variable Subjective Norms (SN))

Other Variables	Items measuring the latent variable SN (Valid / Missing)		
	SN1	**SN 2**	**SN 3**
Recycling behavior (*) **(Valid / Missing)**			
Spearman correlation	0.126	0.123	0.123
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093
Gender (Valid / Missing)			
Spearman correlation	0.137	0.130	0.128
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093
Age (Valid / Missing)			
Spearman correlation	0.151	0.147	0.143
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093
Education (Valid / Missing)			
Spearman correlation	0.055	0.054	0.063
p (2-tailed)	0.011	0.013	0.004
N	2093	2093	2093
Income (Valid / Missing)			
Spearman correlation	0.157	0.158	0.131
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE H.13
Correlations between valid / missing dichotomous variables and some variables of interest (Items measuring the latent variable Subjective Norms (SN))

Other Variables	Items measuring the latent variable SN (Valid / Missing)		
	SN1	**SN 2**	**SN 3**
Recycling behavior (*)			
Spearman correlation	0.107	0.102	0.110
p (2-tailed)	0.000	0.000	0.000
N	1960	1960	1960
Gender			
Spearman correlation	-0.024	-0.016	-0.013
p (2-tailed)	0.300	0.480	0.581
N	1897	1897	1897
Age			
Spearman correlation	-0.144	-0.136	-0.138
p (2-tailed)	0.000	0.000	0.000
N	1884	1884	1884
Education			
Spearman correlation	0.194	0.189	0.188
p (2-tailed)	0.000	0.000	0.000
N	1735	1735	1735
Income			
Spearman correlation	0.093	0.090	0.106
p (2-tailed)	0.000	0.000	0.000
N	1685	1685	1685

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

FIGURE H.2
Profile of means of items measuring the latent variable Subjective Norms (SN) for recycler and non-recycler households

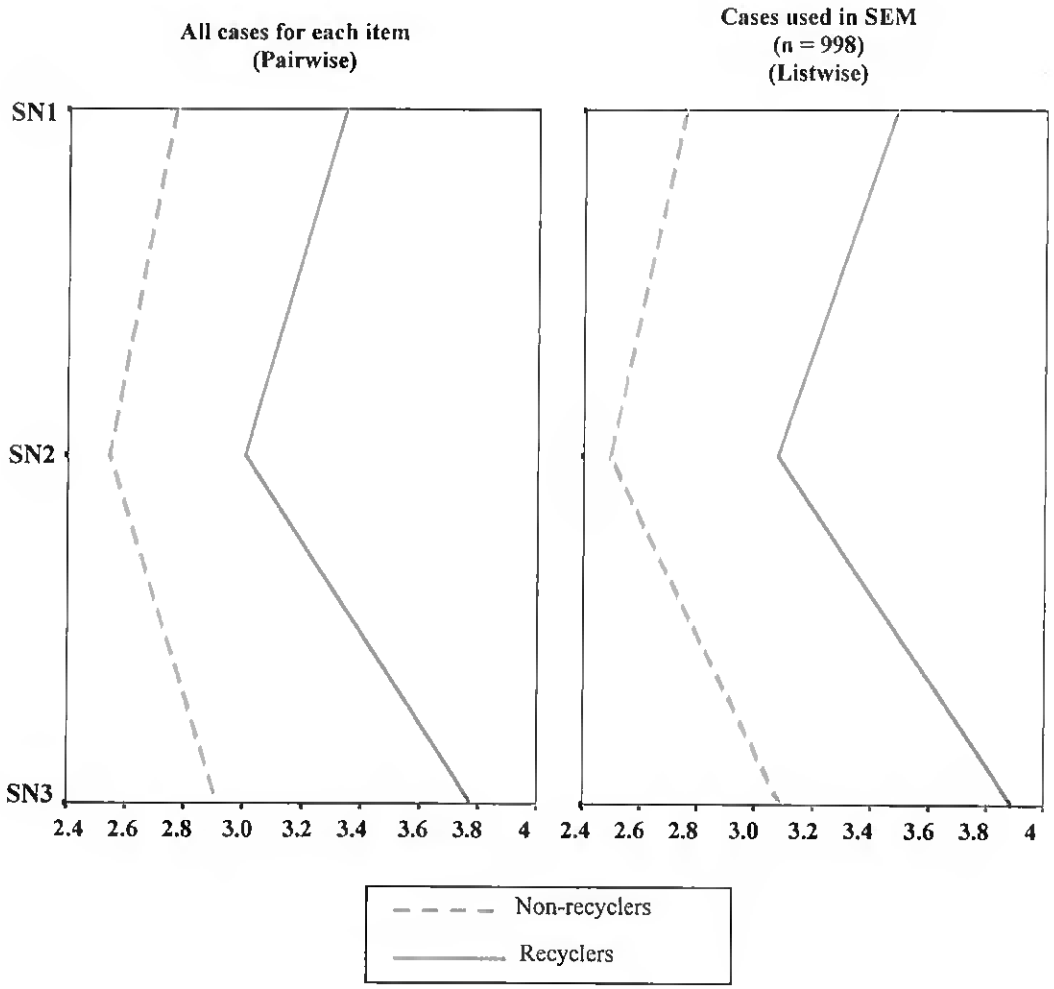


TABLE H.14
Univariate Statistics
(Items measuring the latent variable Perceived Behavior Control (PBC))

Items measuring the latent variable PBC	N		
	Valid	Missing	
		Count	Percent
PBC – For me, recycling household waste is a very difficult task × Recycling household waste is not up to me	2034	59	2.8

TABLE H.15
Correlations of valid / missing dichotomous variables
(Items measuring the latent variable
Perceived Behavior Control (PBC))

Other Variables	PBC (Valid / Missing)
Recycling behavior (*) **(Valid / Missing)**	
Spearman correlation	0.192
p (2-tailed)	0.000
N	2093
Gender (Valid / Missing)	
Spearman correlation	0.134
p (2-tailed)	0.000
N	2093
Age (Valid / Missing)	
Spearman correlation	0.136
p (2-tailed)	0.000
N	2093
Education (Valid / Missing)	
Spearman correlation	0.068
p (2-tailed)	0.002
N	2093
Income (Valid / Missing)	
Spearman correlation	0.135
p (2-tailed)	0.000
N	2093

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?"

TABLE H.16
Correlations between valid / missing dichotomous variables and some variables of interest Perceived Behavior Control (PBC))

Other Variables	PBC (Valid / Missing)
Recycling behavior (*)	
Spearman correlation	0.039
p (2-tailed)	0.081
N	1960
Gender	
Spearman correlation	-0.046
p (2-tailed)	0.043
N	1897
Age	
Spearman correlation	-0.050
p (2-tailed)	0.030
N	1884
Education	
Spearman correlation	0.135
p (2-tailed)	0.000
N	1735
Income	
Spearman correlation	0.099
p (2-tailed)	0.000
N	1685

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE H.17
Univariate Statistics
(Items measuring the latent variable Perceived Convenience (CONV))

Items measuring the latent variable CONV	N		
	Valid	Missing	
		Count	Percent
CONV1 - Disposal conditions	1215	878	41.9
CONV 2 - System adequacy and information	1269	824	39.4
CONV 3 - Disposal containers location	1367	726	34.7

TABLE H.18
Tabulated missing values patterns [a]
(Items measuring the latent variable Perceived Convenience (CONV))

Number of Cases	Items measuring the latent variable CONV		
	CONV1	CONV2	CONV3
50	X		X
94	X		
70	X	X	
88		X	
664	X	X	X

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE H.19
Correlations of valid / missing dichotomous variables
(Items measuring the latent variable Perceived Convenience (CONV))

Other Variables	Items measuring the latent variable CONV (Valid / Missing)		
	CONV1	**CONV2**	**CONV3**
Recycling behavior (*) **(Valid / Missing)**			
Spearman correlation	0.112	0.127	0.148
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093
Gender (Valid / Missing)			
Spearman correlation	0.066	0.077	0.090
p (2-tailed)	0.003	0.000	0.000
N	2093	2093	2093
Age (Valid / Missing)			
Spearman correlation	0.072	0.087	0.102
p (2-tailed)	0.001	0.000	0.000
N	2093	2093	2093
Education (Valid / Missing)			
Spearman correlation	0.036	0.062	0.061
p (2-tailed)	0.104	0.004	0.005
N	2093	2093	2093
Income (Valid / Missing)			
Spearman correlation	0.105	0.134	0.108
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE H.20
Correlations between valid / missing dichotomous variables and some variables of interest
(Items measuring the latent variable Perceived Convenience (CONV))

Other Variables	Items measuring the latent variable CONV (Valid / Missing)		
	CONV1	CONV2	CONV3
Recycling behavior (*)			
Spearman correlation	0.042	0.048	0.046
p (2-tailed)	0.063	0.035	0.044
N	1960	1960	1960
Gender			
Spearman correlation	-0.014	-0.005	0.017
p (2-tailed)	0.529	0.829	0.468
N	1897	1897	1897
Age			
Spearman correlation	-0.141	-0.198	-0.163
p (2-tailed)	0.000	0.000	0.000
N	1884	1884	1884
Education			
Spearman correlation	0.134	0.202	0.161
p (2-tailed)	0.000	0.000	0.000
N	1735	1735	1735
Income			
Spearman correlation	0.054	0.065	0.046
p (2-tailed)	0.027	0.008	0.057
N	1685	1685	1685

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

FIGURE H.3
Profile of means of items measuring the latent variable Perceived Convenience (CONV) for recycler and non-recycler households

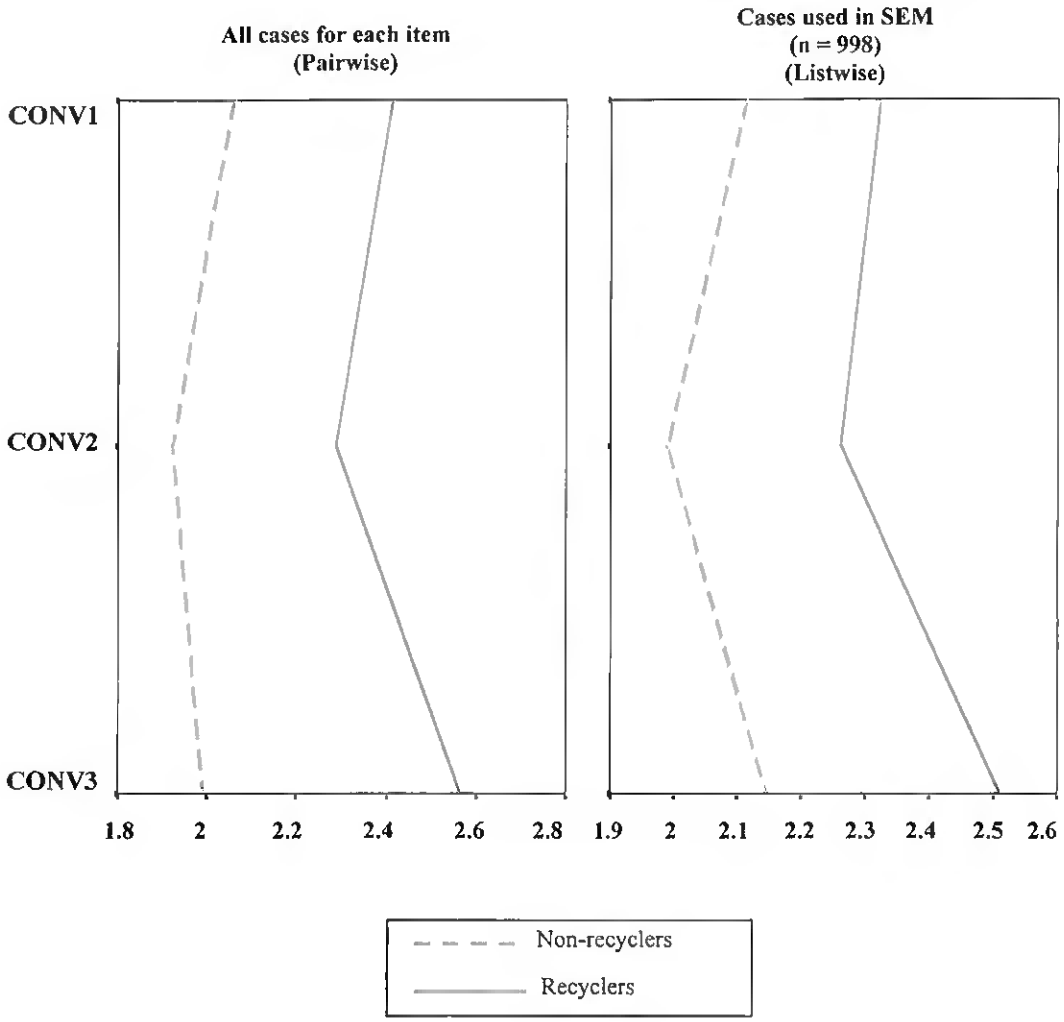


TABLE H.21
Univariate Statistics
(Items measuring the latent variable Specific Knowledge (KN))

Items measuring the latent variable KN	N		
	Valid	Missing	
		Count	Percent
KN1 - Should bottles and other glass packaging be separated and disposed for recycling?	1848	245	11.7
KN2 - Should paper /cardboard packaging be separated and disposed for recycling?	1779	314	15.0
KN3 - Should cans be separated and disposed for recycling?	1618	475	22.7
KN4 - Should plastic packaging be separated and disposed for recycling?	1672	421	20.1

TABLE H.22
Tabulated missing values patterns [a]
(Items measuring the latent variable Specific Knowledge (KN))

Number of Cases	Items measuring the latent variable KN			
	KN1	KN2	KN3	KN4
77			X	
35				X
62		X	X	X
223	X	X	X	X

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE H.23
Correlations of valid / missing dichotomous variables
(Items measuring the latent variable Specific Knowledge (KN))

Other Variables	Items measuring the latent variable KN (Valid / Missing)			
	KN1	**KN2**	**KN3**	**KN4**
Recycling behavior (*) **(Valid / Missing)**				
Spearman correlation	0.307	0.264	0.191	0.211
p (2-tailed)	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093
Gender (Valid / Missing)				
Spearman correlation	0.107	0.108	0.096	0.101
p (2-tailed)	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093
Age (Valid / Missing)				
Spearman correlation	0.097	0.106	0.093	0.095
p (2-tailed)	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093
Education (Valid / Missing)				
Spearman correlation	0.111	0.093	0.048	0.070
p (2-tailed)	0.000	0.000	0.029	0.001
N	2093	2093	2093	2093
Income (Valid / Missing)				
Spearman correlation	0.102	0.080	0.079	0.102
p (2-tailed)	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093

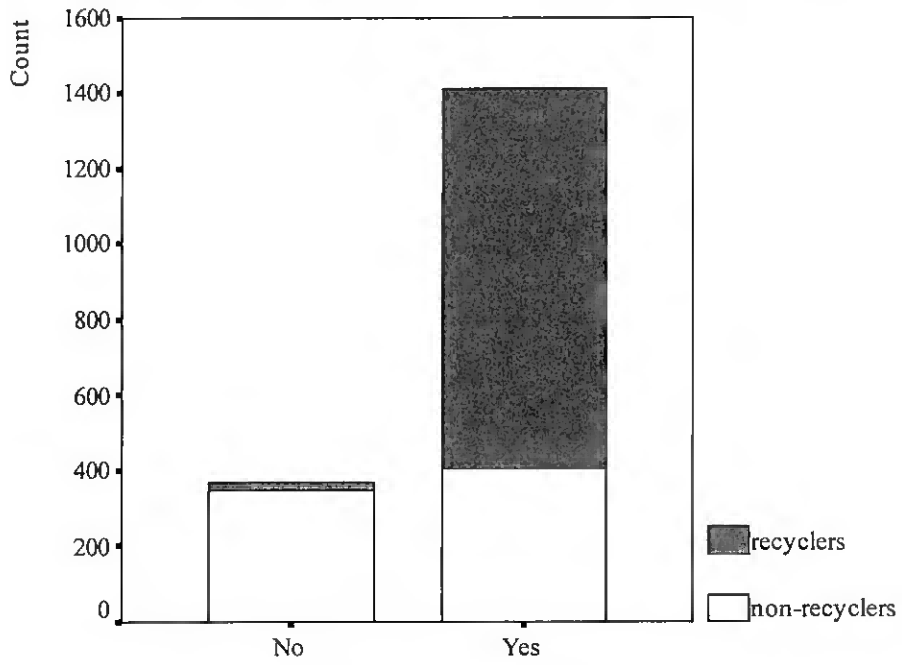
(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE H.24
Correlations between valid / missing dichotomous variables and some variables of interest
(Items measuring the latent variable Specific Knowledge (KN))

Other Variables	Items measuring the latent variable KN (Valid / Missing)			
	KN1	**KN2**	**KN3**	**KN4**
Recycling behavior (*)				
Spearman correlation	0.200	0.145	0.014	0.062
p (2-tailed)	0.000	0.000	0.547	0.006
N	1960	1960	1960	1960
Gender				
Spearman correlation	-0.031	-0.008	-0.036	-0.012
p (2-tailed)	0.181	0.713	0.112	0.594
N	1897	1897	1897	1897
Age				
Spearman correlation	-0.144	-0.145	-0.182	-0.166
p (2-tailed)	0.000	0.000	0.000	0.000
N	1884	1884	1884	1884
Education				
Spearman correlation	0.162	0.151	0.152	0.143
p (2-tailed)	0.000	0.000	0.000	0.000
N	1735	1735	1735	1735
Income				
Spearman correlation	0.138	0.097	0.104	0.089
p (2-tailed)	0.000	0.000	0.000	0.000
N	1685	1685	1685	1685

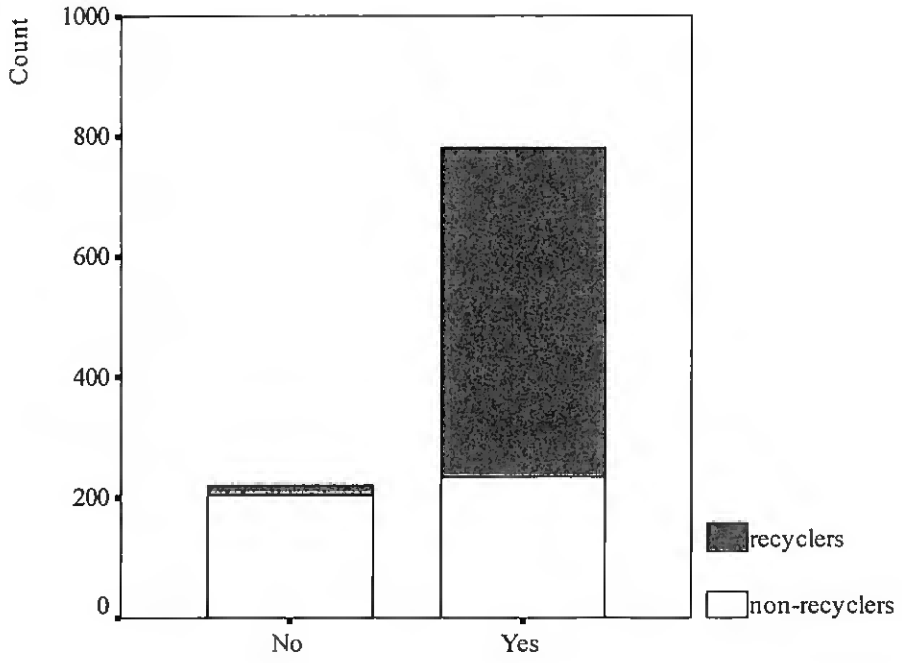
(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

FIGURE H.4
Number of recycler and non-recycler households per category of the item KN1
(Distribution of all valid cases for the item in the initial sample: n = 1848)



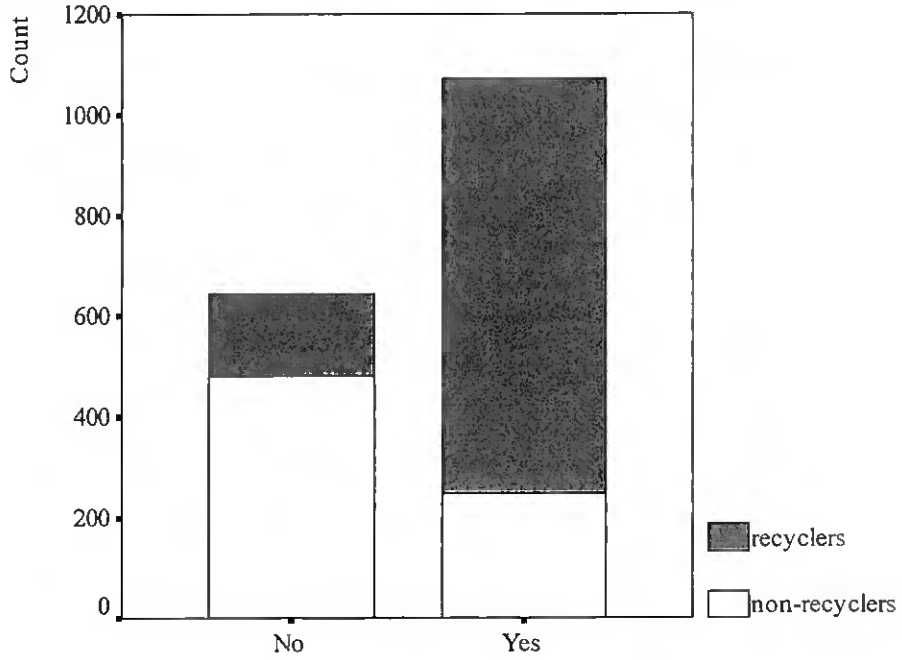
KN1 - Should bottles and other glass packaging be recycled?

FIGURE H.5
Number of recycler and non-recycler households per category of the item KN1
(Distribution of cases used in SEM: n = 998)



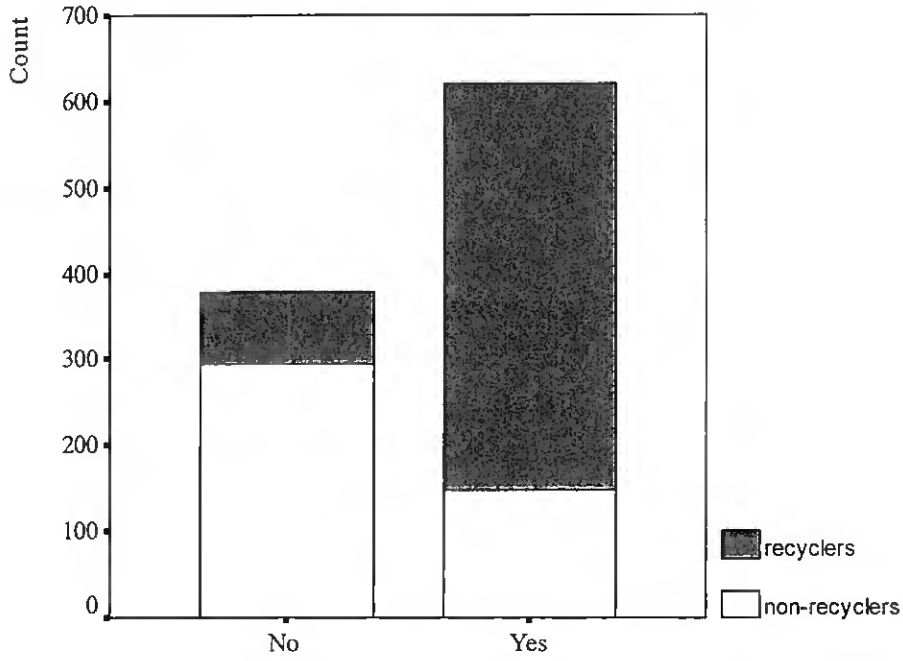
KN1 - Should bottles and other glass packaging be recycled?

FIGURE H.6
Number of recycler and non-recycler households per category of the item KN2
(Distribution of all valid cases for the item in the initial sample: n = 1779)



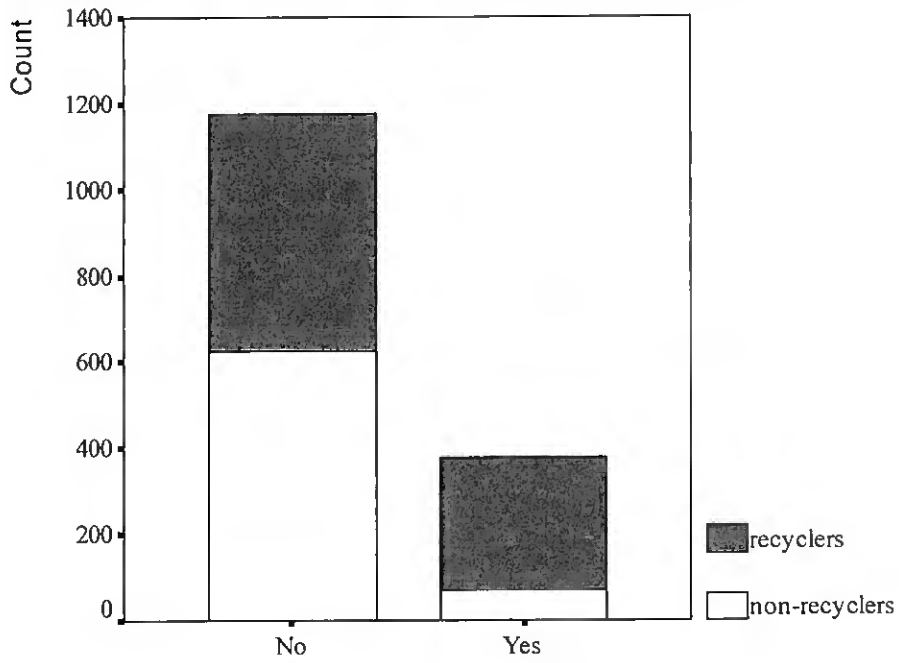
KN2 - Should paper / cardboard packaging be recycled?

FIGURE H.7
Number of recycler and non-recycler households per category of the item KN2
(Distribution of cases used in SEM: n = 998)



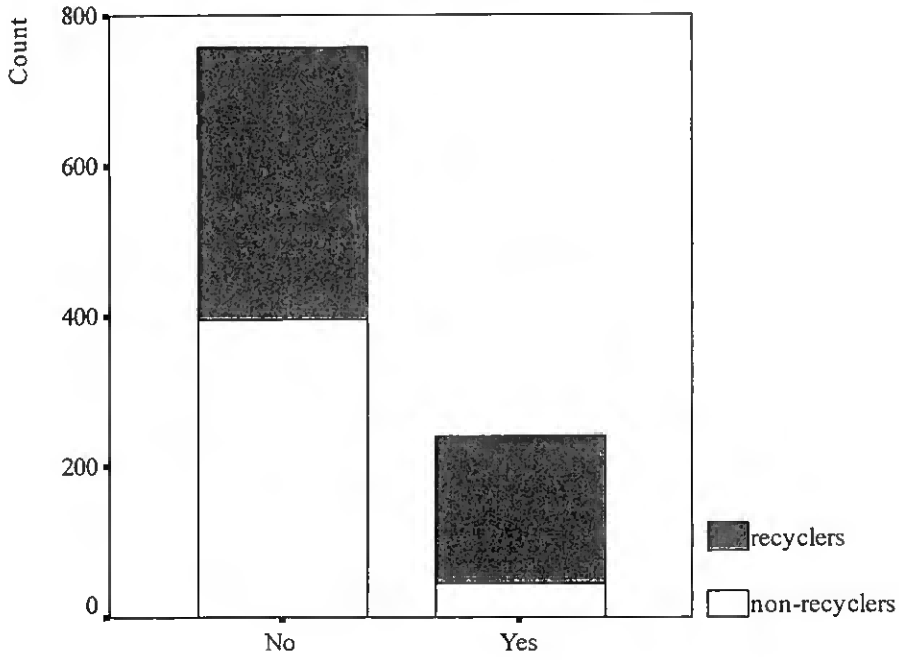
KN2 - Should paper / cardboard packaging be recycled?

FIGURE H.8
Number of recycler and non-recycler households per category of the item KN3
(Distribution of all valid cases for the item in the initial sample: n = 1618)



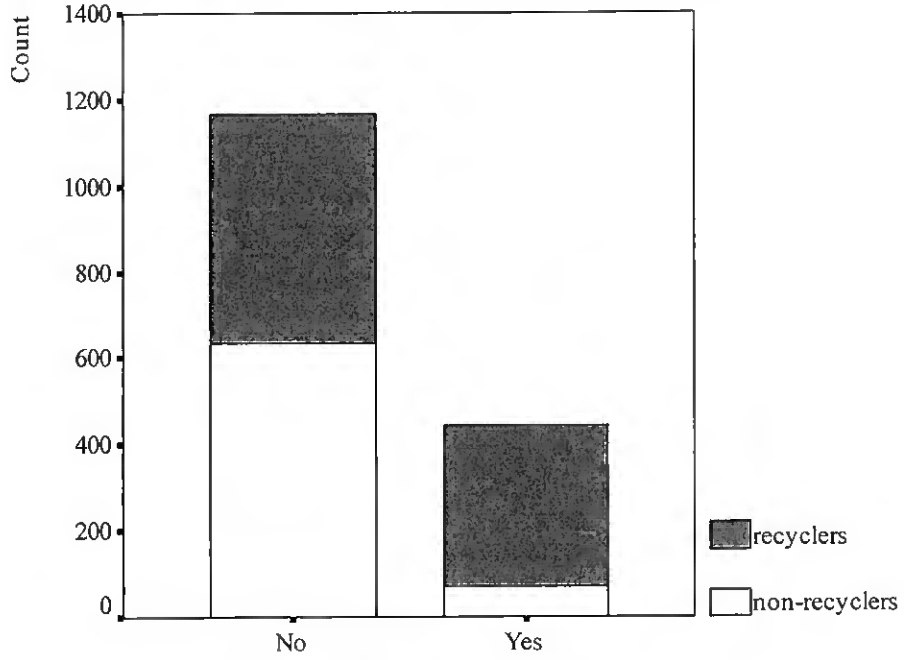
KN3 - Should cans be recycled?

FIGURE H.9
Number of recycler and non-recycler households per category of the item KN3
(Distribution of cases used in SEM: n = 998)



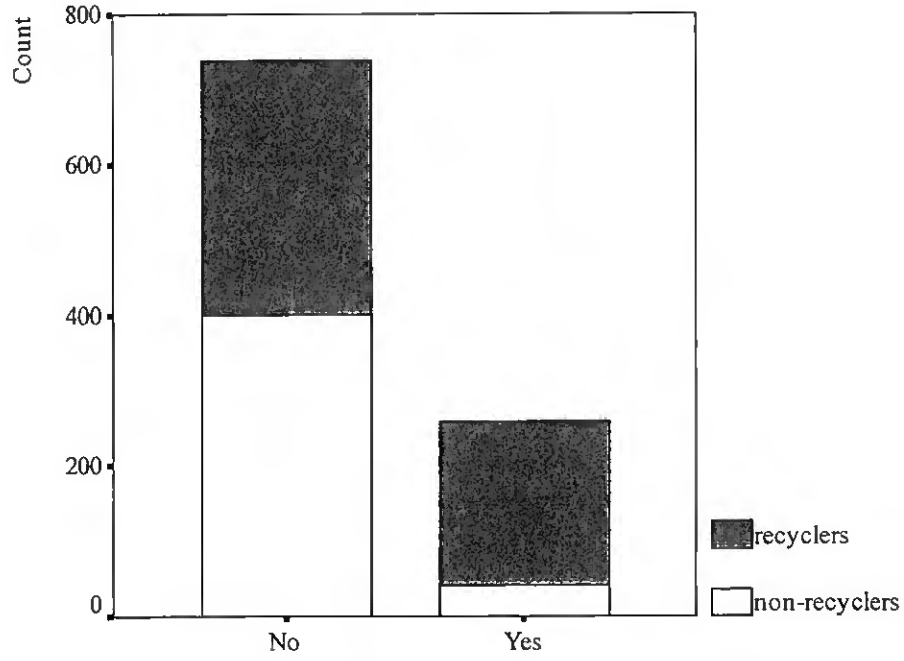
KN3 - Should cans be recycled?

FIGURE H.10
Number of recycler and non-recycler households per category of the item KN4
(Distribution of all valid cases for the item in the initial sample: n = 1672)



KN4 - Should plastic packaging be recycled?

FIGURE H.11
Number of recycler and non-recycler households per category of the item KN4
(Distribution of cases used in SEM: n = 998)



KN4 - Should plastic packaging be recycled?

TABLE H.25
Univariate Statistics
(Items measuring the latent variable Personal Norms (PN))

Items measuring the latent variable PN	N		
	Valid	Missing	
		Count	Percent
PN1 – I feel a strong personal obligation to recycle a large proportion of by households' recyclables	2047	46	2.2
PN2 – I would feel guilty if I didn't recycle regularly my households' recyclables	2046	47	2.2
PN3 – I am willing to go blocks out of my way to recycle household materials on a regular basis	2043	50	2.4

TABLE H.26
Tabulated missing values patterns [a]
(Items measuring the latent variable Personal Norms (PN))

Number of Cases	Items measuring the latent variable PN		
	PN1	PN2	PN3
34	X	X	X

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE H.27
Correlations of valid / missing dichotomous variables
(Items measuring the latent variable Personal Norms (PN))

Other Variables	Items measuring the latent variable PN (Valid / Missing)		
	PN1	**PN2**	**PN3**
Recycling behavior (*) **(Valid / Missing)**			
Spearman correlation	0.188	0.203	0.212
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093
Gender (Valid / Missing)			
Spearman correlation	0.153	0.132	0.139
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093
Age (Valid / Missing)			
Spearman correlation	0.157	0.136	0.154
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093
Education (Valid / Missing)			
Spearman correlation	0.053	0.054	0.068
p (2-tailed)	0.015	0.014	0.002
N	2093	2093	2093
Income (Valid / Missing)			
Spearman correlation	0.107	0.105	0.121
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE H.28
Correlations between valid / missing dichotomous variables and some variables of interest (Items measuring the latent variable Personal Norms (PN))

Other Variables	Items measuring the latent variable PN (Valid / Missing)		
	PV1	**PV2**	**PV3**
Recycling behavior (*)			
Spearman correlation	0.042	0.057	0.038
p (2-tailed)	0.066	0.011	0.097
N	1960	1960	1960
Gender			
Spearman correlation	-0.026	-0.005	-0.022
p (2-tailed)	0.259	0.830	0.329
N	1897	1897	1897
Age			
Spearman correlation	-0.047	-0.026	-0.037
p (2-tailed)	0.042	0.263	0.109
N	1884	1884	1884
Education			
Spearman correlation	0.122	0.151	0.123
p (2-tailed)	0.000	0.000	0.000
N	1735	1735	1735
Income			
Spearman correlation	0.074	0.118	0.081
p (2-tailed)	0.002	0.000	0.001
N	1685	1685	1685

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

FIGURE H.12
Profile of means of items measuring the latent variable Personal Norms (PN) for recycler and non-recycler households

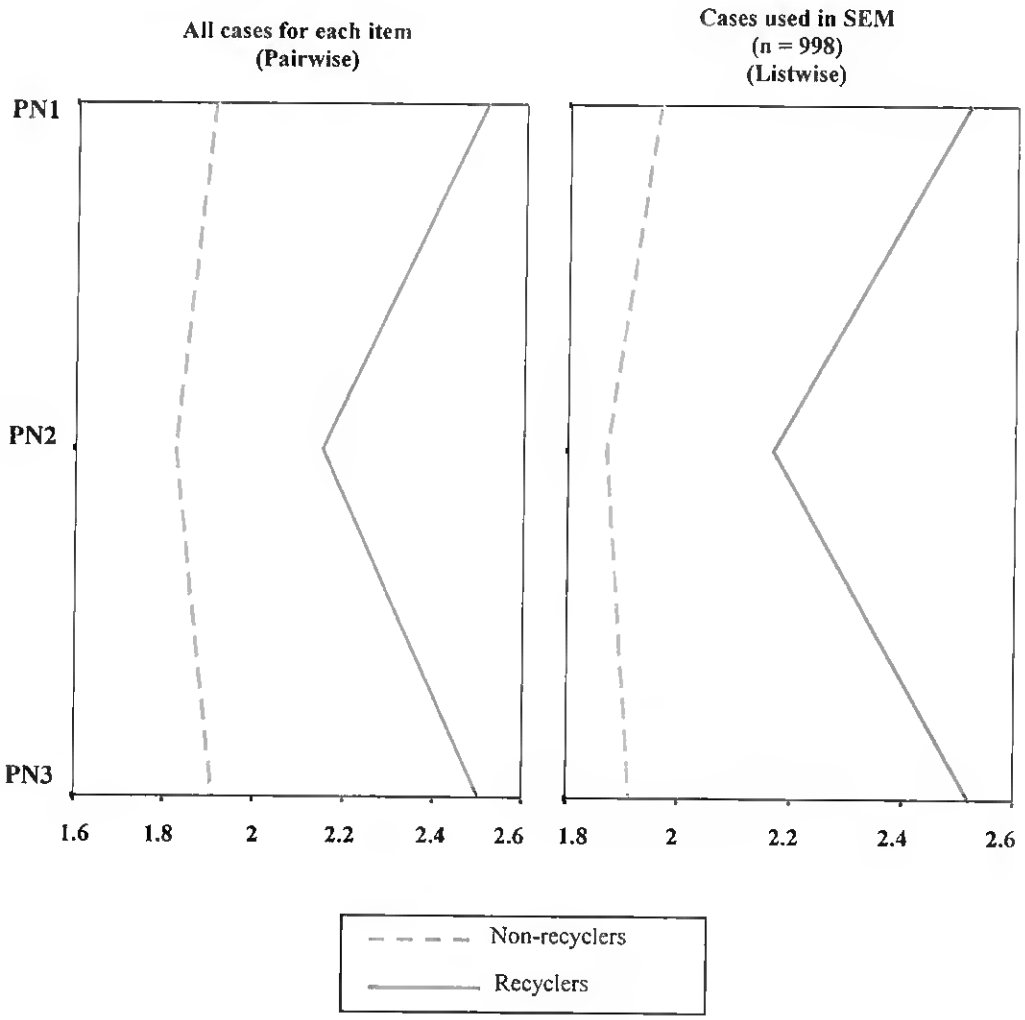


TABLE H.29
Univariate Statistics
(Items measuring the latent variable General Environmental Attitudes (GEA))

Items measuring the latent variable GEA	N		
	Valid	Missing	
		Count	Percent
GEA1 – When people interfere with nature, it often produces disastrous consequences	2049	44	2.1
GEA2 – People must live in harmony with nature to survive	2066	27	1.3
GEA3 – The balance of nature is very delicate and easily upset	2035	58	2.8
GEA4 – There are limits of growth beyond which our industrialized society cannot expand	1981	112	5.4
GEA5 – Humans are severely abusing the environment	2053	40	1.9
GEA6 – To maintain a healthy economy, we will have to develop a "steady-state" economy where industrial growth is controlled	2008	85	4.1

TABLE H.30
Tabulated missing values patterns [a]
(Items measuring the latent variable General Environmental Attitudes (GEA))

Number of Cases	Items measuring the latent variable GEA					
	GEA1	GEA2	GEA3	GEA4	GEA5	GEA6
48				X		

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE H.31
Correlations of valid / missing dichotomous variables
(Items measuring the latent variable General Environmental Attitudes (GEA))

Other Variables	Items measuring the latent variable GEA (Valid / Missing)					
	GEA1	**GEA2**	**GEA3**	**GEA4**	**GEA5**	**GEA6**
Recycling behavior (*) **(Valid / Missing)**						
Spearman correlation	0.085	0.092	0.123	0.130	0.150	0.125
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093
Gender (Valid / Missing)						
Spearman correlation	0.033	0.065	0.056	0.084	0.159	0.117
p (2-tailed)	0.132	0.003	0.011	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093
Age (Valid / Missing)						
Spearman correlation	0.040	0.075	0.060	0.077	0.163	0.117
p (2-tailed)	0.067	0.001	0.006	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093
Education (Valid / Missing)						
Spearman correlation	0.004	0.027	0.008	0.010	0.076	0.004
p (2-tailed)	0.848	0.221	0.703	0.635	0.001	0.848
N	2093	2093	2093	2093	2093	2093
Income (Valid / Missing)						
Spearman correlation	0.054	0.040	0.093	0.103	0.116	0.054
p (2-tailed)	0.013	0.068	0.000	0.000	0.000	0.013
N	2093	2093	2093	2093	2093	2093

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE H.32
Correlations between valid / missing dichotomous variables and some variables of interest
(Items measuring the latent variable General Environmental Attitudes (GEA))

Other Variables	Items measuring the latent variable GEA (Valid / Missing)					
	GEA1	**GEA2**	**GEA3**	**GEA4**	**GEA5**	**GEA6**
Recycling behavior (*)						
Spearman correlation	-0.014	-0.011	0.022	0.016	0.042	-0.002
p (2-tailed)	0.533	0.639	0.341	0.472	0.062	0.943
N	1960	1960	1960	1960	1960	1960
Gender						
Spearman correlation	-0.008	0.000	-0.011	-0.029	0.009	-0.001
p (2-tailed)	0.731	0.992	0.643	0.206	0.684	0.975
N	1897	1897	1897	1897	1897	1897
Age						
Spearman correlation	-0.048	-0.002	-0.081	-0.064	-0.032	-0.108
p (2-tailed)	0.039	0.927	0.000	0.005	0.168	0.000
N	1884	1884	1884	1884	1884	1884
Education						
Spearman correlation	0.049	0.084	0.125	0.151	0.091	0.148
p (2-tailed)	0.043	0.000	0.000	0.000	0.000	0.000
N	1735	1735	1735	1735	1735	1735
Income						
Spearman correlation	0.005	0.027	0.071	0.068	0.063	0.103
p (2-tailed)	0.825	0.272	0.004	0.005	0.010	0.000
N	1685	1685	1685	1685	1685	1685

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

FIGURE H.13
Profile of means of items measuring the latent variable General Environmental Attitudes (GEA) for recycler and non-recycler households

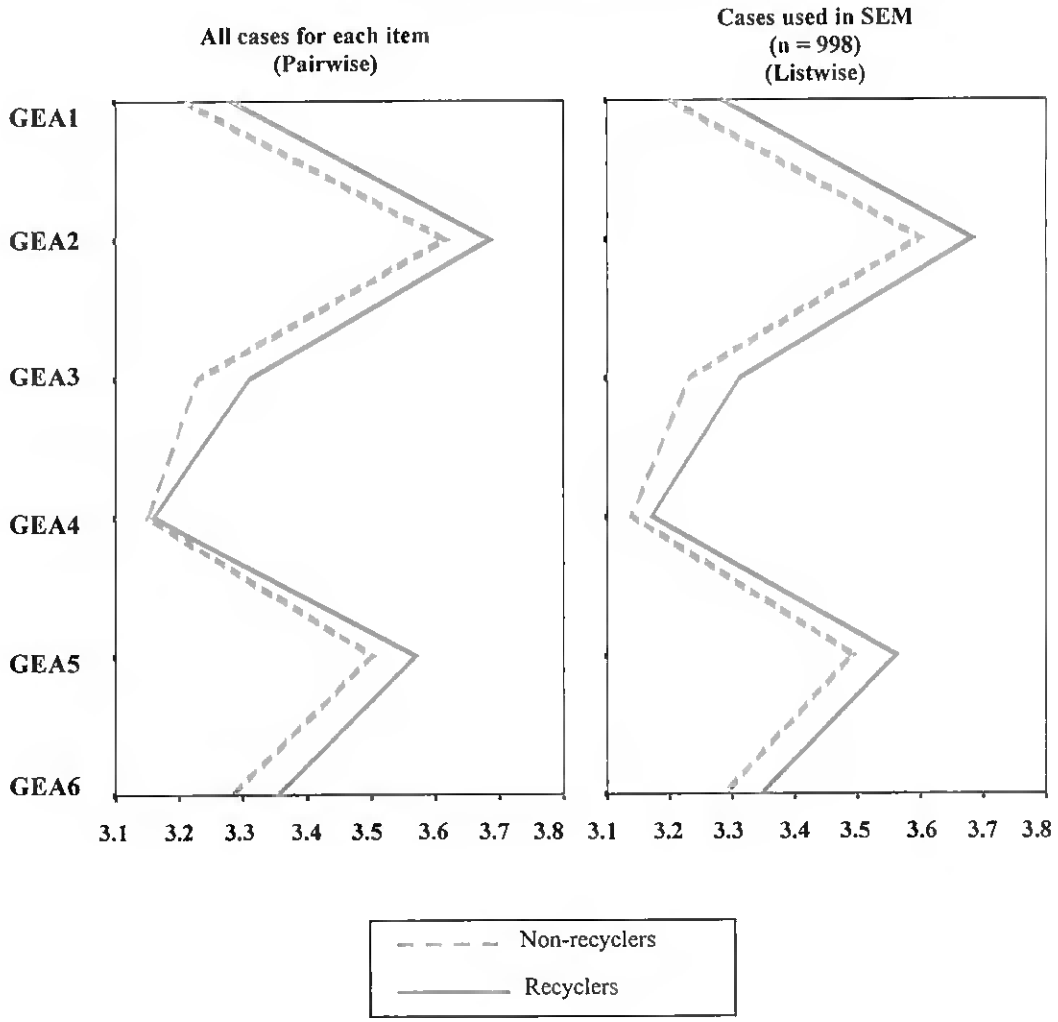


TABLE H.33
Univariate Statistics
(Items measuring the latent variable Personal Values (PV))

Items measuring the latent variable PV	N		
	Valid	Missing	
		Count	Percent
PV1 – Satisfaction in increasing ways to reduce lavishness	2025	68	3,2
PV2 – Satisfaction in promoting actions able to help changing the world	2018	75	3,6
PV3 – Satisfaction in helping others	2034	59	2,8

TABLE H.34
Tabulated missing values patterns [a]
(Items measuring the latent variable Personal Values (PV))

Number of Cases	Items measuring the latent variable PV		
	PV1	PV2	PV3
51	X	X	X

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE H.35
Correlations of valid / missing dichotomous variables
(Items measuring the latent variable Personal Values (PV))

Other Variables	Items measuring the latent variable PV (Valid / Missing)		
	PV1	**PV2**	**PV3**
Recycling behavior (*) **(Valid / Missing)**			
Spearman correlation	0.151	0.161	0.157
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093
Gender (Valid / Missing)			
Spearman correlation	0.172	0.150	0.153
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093
Age (Valid / Missing)			
Spearman correlation	0.173	0.150	0.165
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093
Education (Valid / Missing)			
Spearman correlation	0.024	0.028	0.045
p (2-tailed)	0.270	0.193	0.038
N	2093	2093	2093
Income (Valid / Missing)			
Spearman correlation	0.121	0.100	0.113
p (2-tailed)	0.000	0.000	0.000
N	2093	2093	2093

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE H.36
Correlations between valid / missing dichotomous variables and some variables of interest (Items measuring the latent variable Personal Values (PV))

Other Variables	Items measuring the latent variable PV (Valid / Missing)		
	PV1	**PV2**	**PV3**
Recycling behavior (*)			
Spearman correlation	0.016	0.038	0.007
p (2-tailed)	0.490	0.092	0.751
N	1960	1960	1960
Gender			
Spearman correlation	0.007	0.014	0.005
p (2-tailed)	0.770	0.534	0.821
N	1897	1897	1897
Age			
Spearman correlation	-0.061	-0.076	-0.047
p (2-tailed)	0.008	0.001	0.042
N	1884	1884	1884
Education			
Spearman correlation	0.091	0.083	0.080
p (2-tailed)	0.000	0.001	0.001
N	1735	1735	1735
Income			
Spearman correlation	0.040	0.027	0.031
p (2-tailed)	0.103	0.270	0.205
N	1685	1685	1685

(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

FIGURE H.14
Profile of means of items measuring the latent variable Personal Values (PV) for recycler and non-recycler households

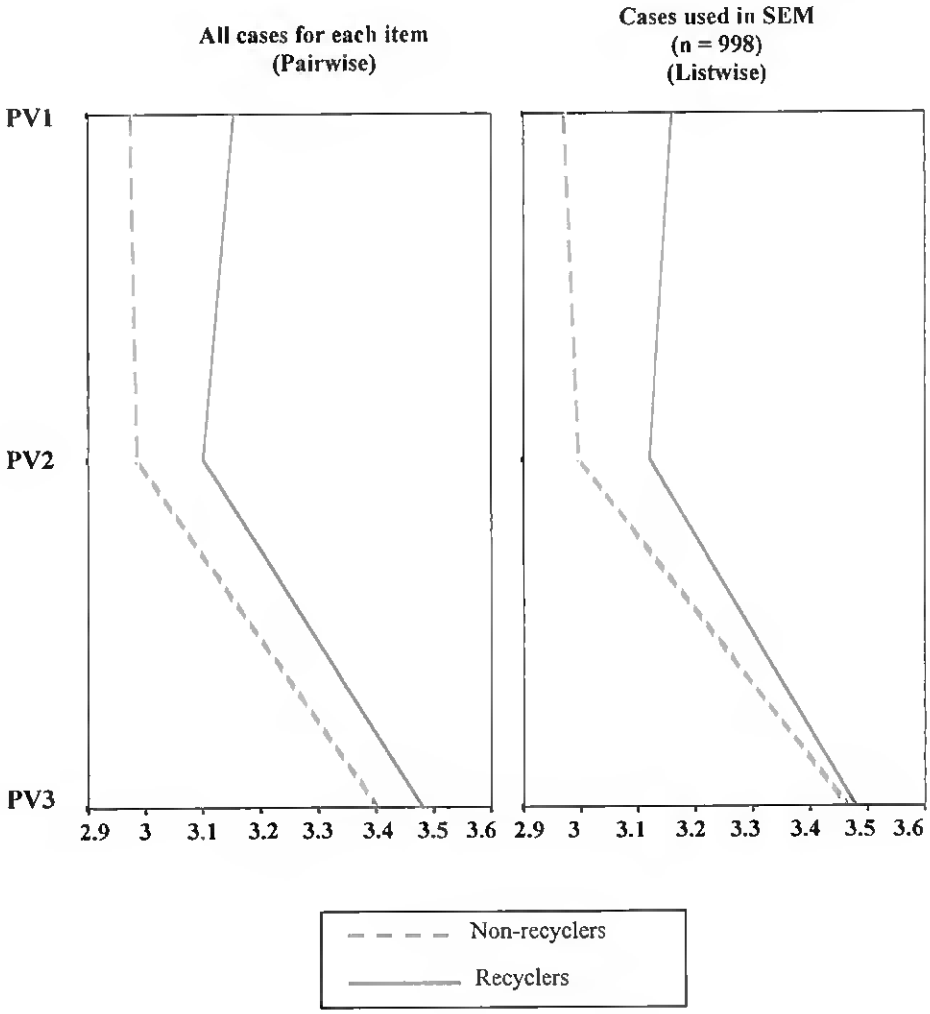


TABLE H.37
Univariate Statistics
(Items measuring the latent variable Communication (COM))

Items measuring the latent variable COM	N		
	Valid	Missing	
		Count	Percent
COM1 – Information through TV	1862	231	11.0
COM2 – Information through billboards	1720	373	17.8
COM3 – Information placed in "Ecopoints"	1712	381	18.2
COM4 – Information through radio	1746	347	16.6
COM5 – Information through national daily newspapers	1732	361	17.2

TABLE H.38
Tabulated missing values patterns [a]
(Items measuring the latent variable Communication (COM))

Number of Cases	Items measuring the latent variable COM				
	COM1	COM2	COM3	COM4	COM5
21		X			
47			X		
24		X	X		X
63		X	X	X	X
191	X	X	X	X	X

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE H.39
Correlation matrix of valid / missing dichotomous variables
(Items measuring the latent variable Communication (COM))

Other Variables	Items measuring the latent variable COM (Valid / Missing)				
	COM1	**COM2**	**COM3**	**COM4**	**COM5**
Recycling behavior (*) **(Valid / Missing)**					
Spearman correlation	0.121	0.083	0.085	0.084	0.094
p (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093
Gender (Valid / Missing)					
Spearman correlation	0.269	0.223	0.218	0.218	0.214
p (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093
Age (Valid / Missing)					
Spearman correlation	0.269	0.224	0.219	0.216	0.215
p (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093
Education (Valid / Missing)					
Spearman correlation	0.140	0.084	0.062	0.108	0.081
p (2-tailed)	0.000	0.000	0.005	0.000	0.000
N	2093	2093	2093	2093	2093
Income (Valid / Missing)					
Spearman correlation	0.227	0.187	0.184	0.180	0.168
p (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093

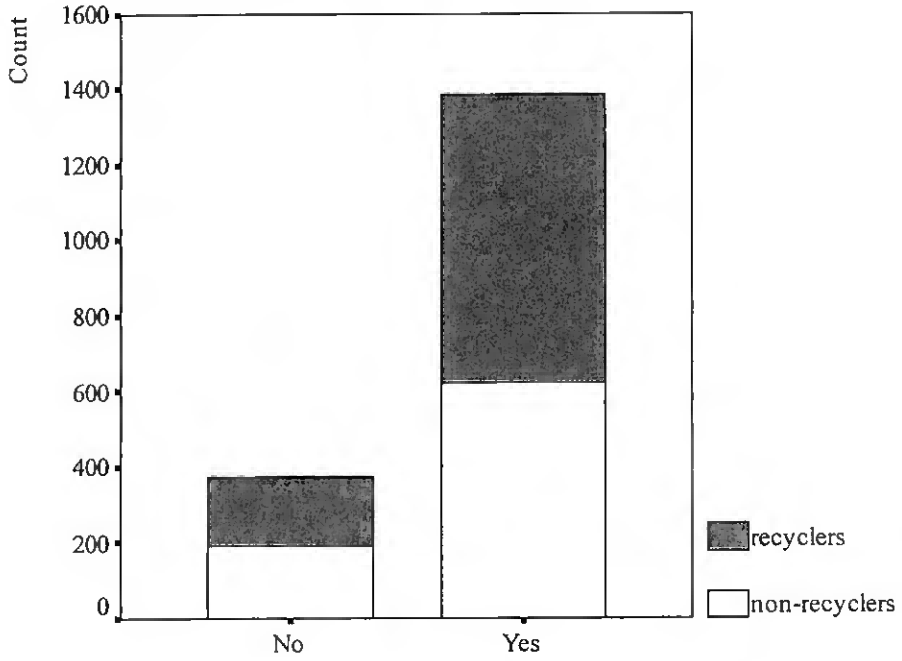
(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE H.40
Correlations between valid / missing dichotomous variables and some variables of interest (Items measuring the latent variable Communication (COM))

Other Variables	Items measuring the latent variable COM (Valid / Missing)				
	COM1	**COM2**	**COM3**	**COM4**	**COM5**
Recycling behavior (*)					
Spearman correlation	-0.055	-0.097	-0.080	-0.050	-0.066
p (2-tailed)	0.015	0.000	0.000	0.028	0.004
N	1960	1960	1960	1960	1960
Gender					
Spearman correlation	-0.018	0.005	-0.007	-0.048	-0.021
p (2-tailed)	0.437	0.831	0.768	0.037	0.370
N	1897	1897	1897	1897	1897
Age					
Spearman correlation	-0.055	-0.123	-0.102	-0.090	-0.097
p (2-tailed)	0.017	0.000	0.000	0.000	0.000
N	1884	1884	1884	1884	1884
Education					
Spearman correlation	0.115	0.165	0.135	0.132	0.153
p (2-tailed)	0.000	0.000	0.000	0.000	0.000
N	1735	1735	1735	1735	1735
Income					
Spearman correlation	0.068	0.046	0.043	0.048	0.060
p (2-tailed)	0.005	0.058	0.075	0.049	0.014
N	1685	1685	1685	1685	1685

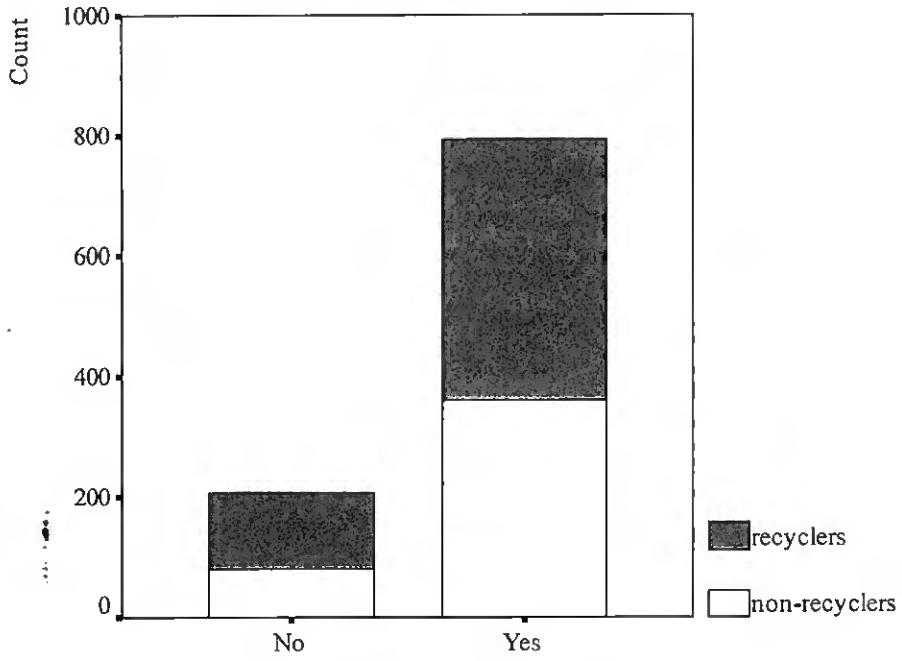
(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

FIGURE H.15
Number of recycler and non-recycler households per category of the item COM1
(Distribution of all valid cases for the item: n = 1862)



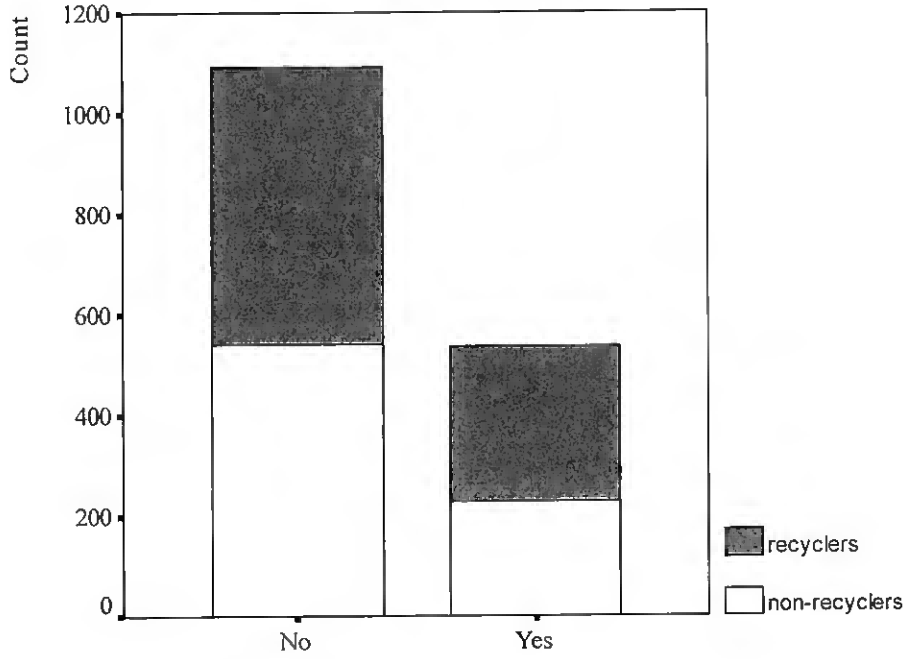
COM1 - Have you received information through TV?

FIGURE H.16
Number of recycler and non-recycler households per category of the item COM1
(Distribution of cases used in SEM: n = 998)



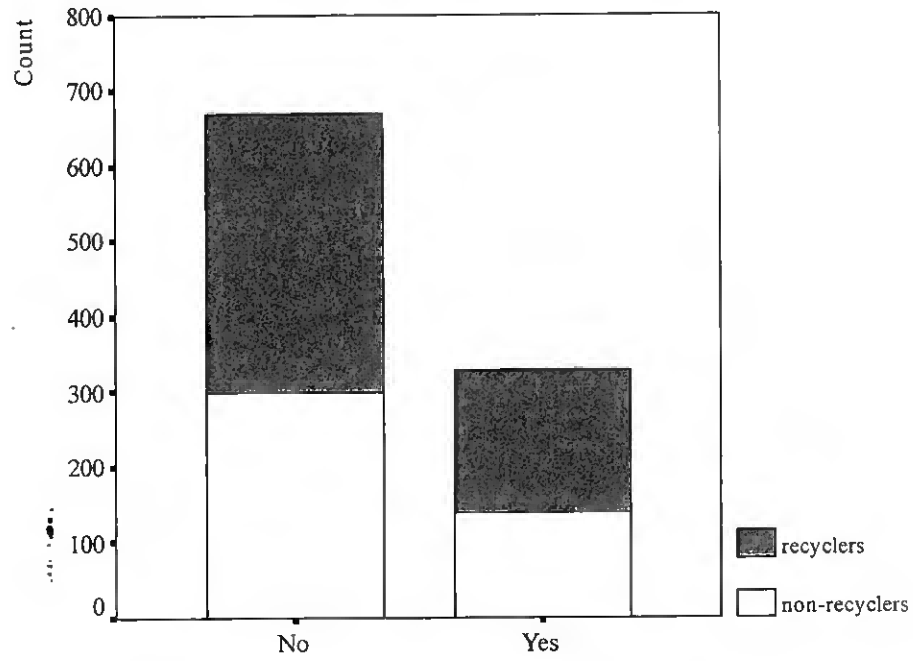
COM1 - Have you received information through TV?

FIGURE H.17
Number of recycler and non-recycler households per category of the item COM2
(Distribution of all valid cases for the item: n = 1720)



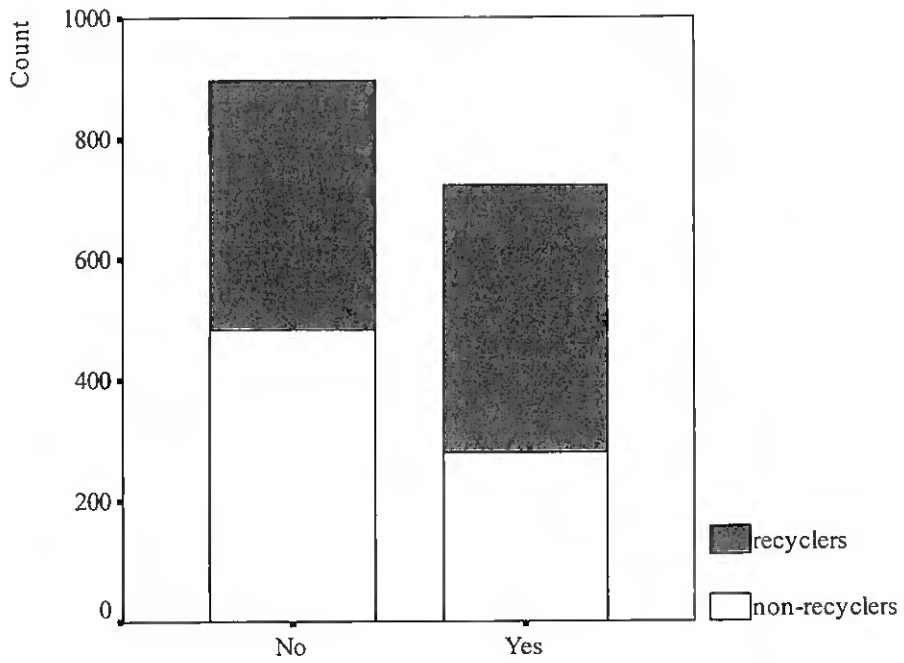
COM2 - Have you received information through billboards?

FIGURE H.18
Number of recycler and non-recycler households per category of the item COM2
(Distribution of cases used in SEM: n = 998)



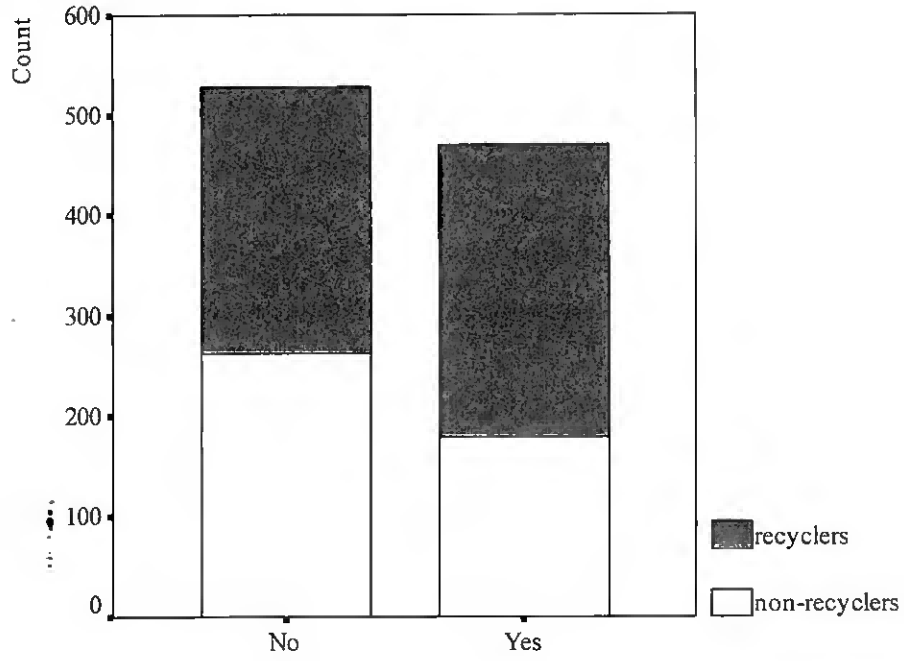
COM2 - Have you received information through billboards?

FIGURE H.19
Number of recycler and non-recycler households per category of the item COM3
(Distribution of all valid cases for the item: n = 1712)



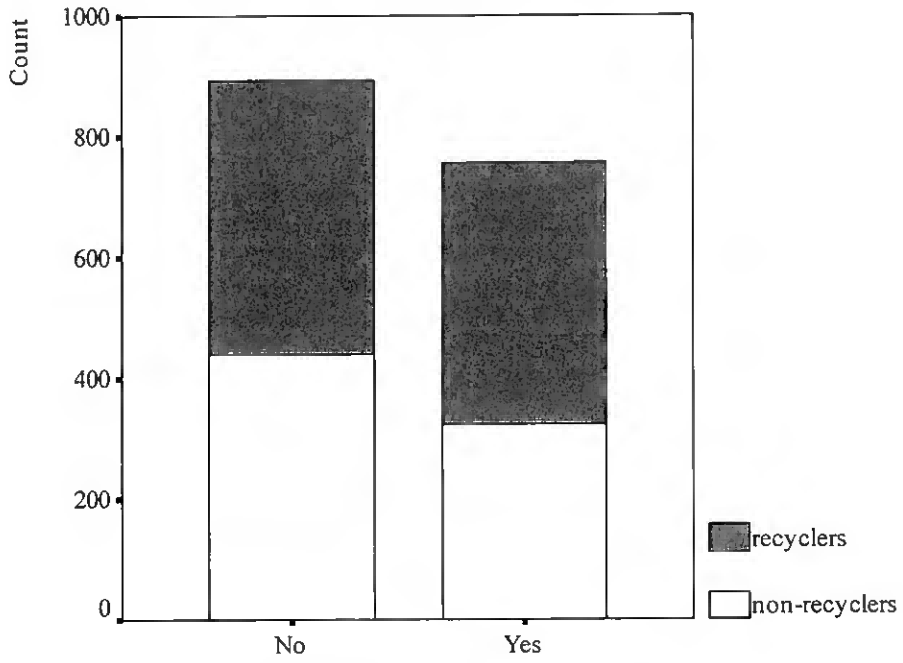
COM3 - Have you received information through "Ecopoints"?

FIGURE H.20
Number of recycler and non-recycler households per category of the item COM3
(Distribution of cases used in SEM: n = 998)



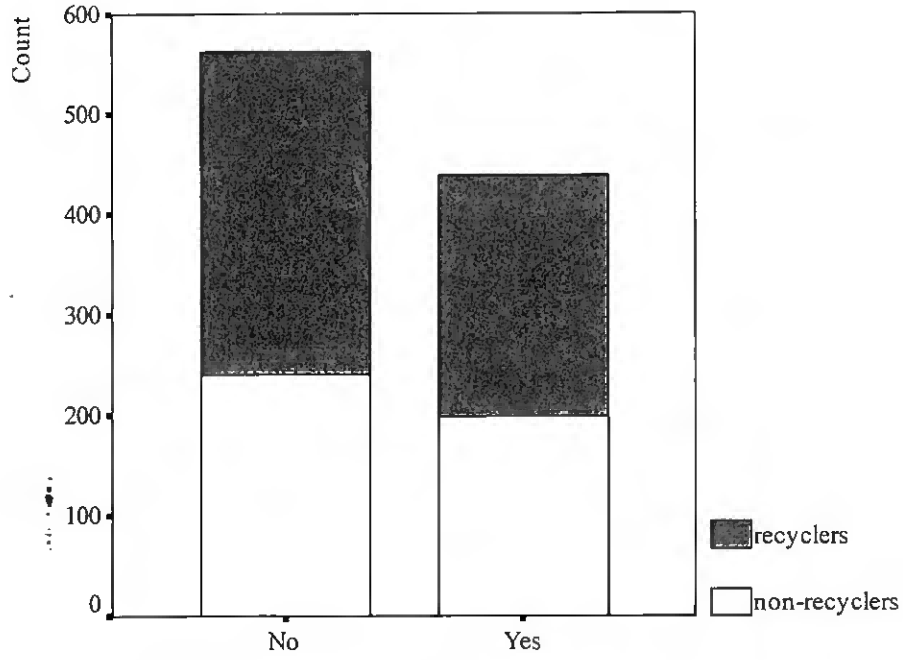
COM3 - Have you received information through "Ecopoints"?

FIGURE H.21
Number of recycler and non-recycler households per category of the item COM4
(Distribution of all valid cases for the item: n = 1746)



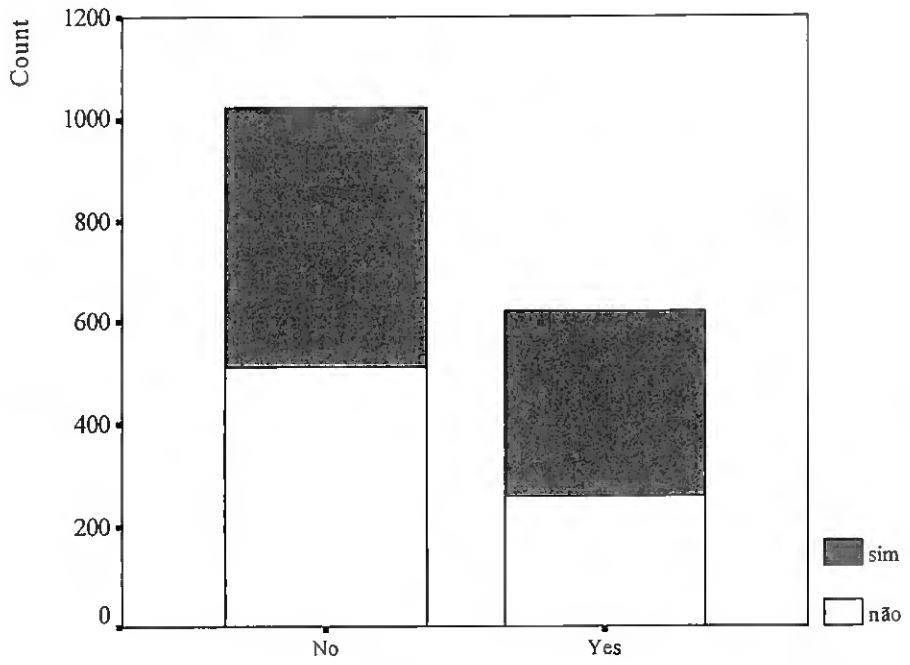
COM4 - Have you received information through radio?

FIGURE H.22
Number of recycler and non-recycler households per category of the item COM4
(Distribution of cases used in SEM: n = 998)



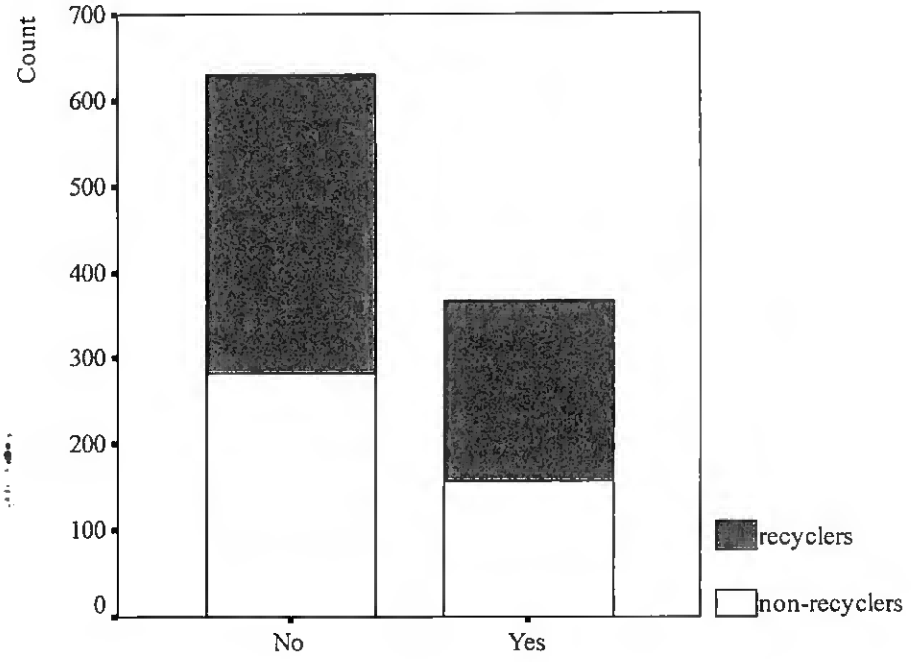
COM4 - Have you received information through radio?

FIGURE H.23
Number of recycler and non-recycler households per category of the item COM5
(Distribution of all valid cases for the item: : n =1732)



COM5 - Have you received information through national newspapers?

FIGURE H.24
Number of recycler and non-recycler households per category of the item COM5
(Distribution of cases used in SEM: n = 998)



COM5 - Have you received information through national newspapers?

Appendix I

ELEMENTS FROM THE MISSING VALUES ANALYSIS (Chapter 7)

TABLE I.1
Univariate Statistics
(Items measuring adherence level and reception of information through the media)

Items measuring adherence level and reception of information through the media	N		
	Valid	Missing	
		Count	Percent
1 – Adherence level	1896	197	9.4
2 – Information through mailing	1796	297	14.2
3 – Information through leaflets	1757	336	16.1
4 – Information through magazines	1750	343	16.4
5 – Information through billboards	1720	373	17.8
6 – Information through municipal or regional newspapers	1758	335	16.0
7 – Information through national daily newspapers	1732	361	17.2
8 – Information through radio	1746	347	16.6
9 – Information placed in "Ecopoints"	1712	381	18.2
10 – Information through TV	1862	231	11.0

TABLE I.2
Tabulated missing values patterns [a]
(Items measuring adherence level and reception of information through the media)

Number of Cases	Items measuring adherence level and reception of information through the media									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
39									X	
48	X									
28		X	X	X	X	X	X	X	X	
105	X	X	X	X	X	X	X	X	X	X
40		X	X	X	X	X	X	X	X	X

(a) Patterns with less than 1% cases (20 or fewer) are not displayed

TABLE I.3
Correlations of valid / missing dichotomous variables
(Items measuring reception of information through the media)

Other Variables	Items measuring adherence level and reception of information through the media (Valid / Missing)								
	1	2	3	4	5	6	7	8	9
Recycling behavior (*) (Valid / Missing)									
Spearman correlation	0.119	0.110	0.096	0.083	0.094	0.095	0.094	0.084	0.085
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093	2093	2093	2093
Gender (Valid / Missing)									
Spearman correlation	0.208	0.203	0.225	0.223	0.207	0.231	0.214	0.218	0.218
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093	2093	2093	2093
Age (Valid / Missing)									
Spearman correlation	0.212	0.206	0.227	0.224	0.208	0.233	0.215	0.216	0.219
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093	2093	2093	2093
Education (Valid / Missing)									
Spearman correlation	0.106	0.088	0.077	0.084	0.074	0.082	0.081	0.108	0.062
p (2-tailed)	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.005
N	2093	2093	2093	2093	2093	2093	2093	2093	2093
Income (Valid / Missing)									
Spearman correlation	0.177	0.166	0.173	0.187	0.162	0.186	0.168	0.180	0.184
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	2093	2093	2093	2093	2093	2093	2093	2093	2093

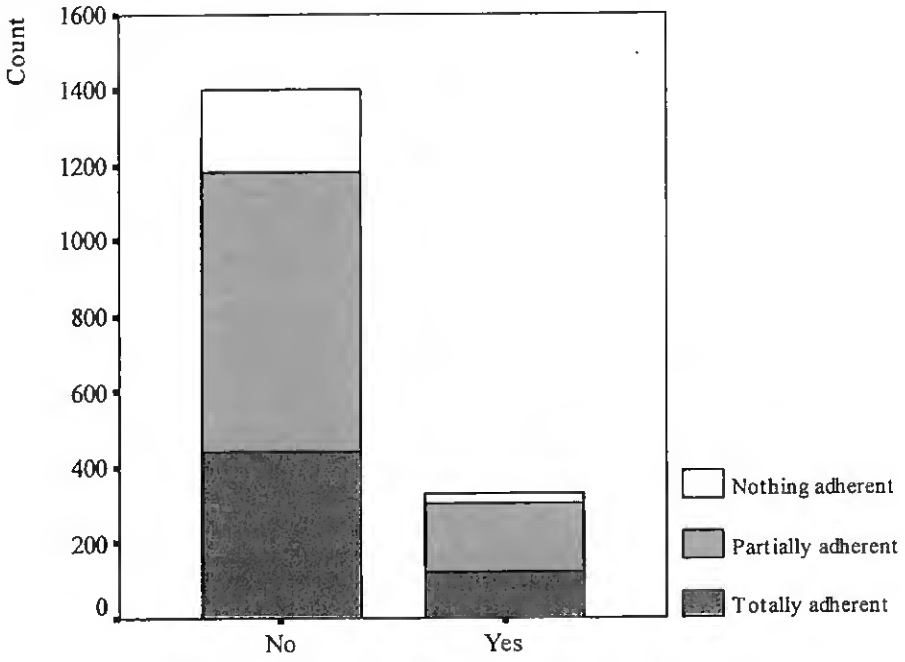
(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

TABLE I.4
Correlations between valid / missing dichotomous variables and some variables of interest (Items measuring reception of information through the media)

Other Variables	Items measuring adherence level and reception of information through the media (Valid / Missing)								
	1	2	3	4	5	6	7	8	9
Recycling behavior (*)									
Spearman correlation	-0.052	-0.066	-0.074	-0.097	-0.054	-0.066	-0.050	-0.055	-0.080
p (2-tailed)	0.021	0.004	0.001	0.000	0.017	0.004	0.028	0.015	0.000
N	1960	1960	1960	1960	1960	1960	1960	1960	1960
Gender									
Spearman correlation	0.024	0.032	0.025	0.005	0.024	-0.021	-0.048	-0.018	-0.007
p (2-tailed)	0.297	0.158	0.281	0.831	0.286	0.370	0.037	0.437	0.768
N	1897	1897	1897	1897	1897	1897	1897	1897	1897
Age									
Spearman correlation	-0.110	-0.131	-0.119	-0.139	-0.095	-0.114	-0.108	-0.066	-0.127
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000
N	1884	1884	1884	1884	1884	1884	1884	1884	1884
Education									
Spearman correlation	0.169	0.184	0.177	0.162	0.142	0.154	0.129	0.113	0.134
p (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	1735	1735	1735	1735	1735	1735	1735	1735	1735
Income									
Spearman correlation	0.058	0.076	0.073	0.048	0.061	0.060	0.048	0.072	0.042
p (2-tailed)	0.018	0.002	0.003	0.051	0.012	0.015	0.049	0.003	0.085
N	1685	1685	1685	1685	1685	1685	1685	1685	1685

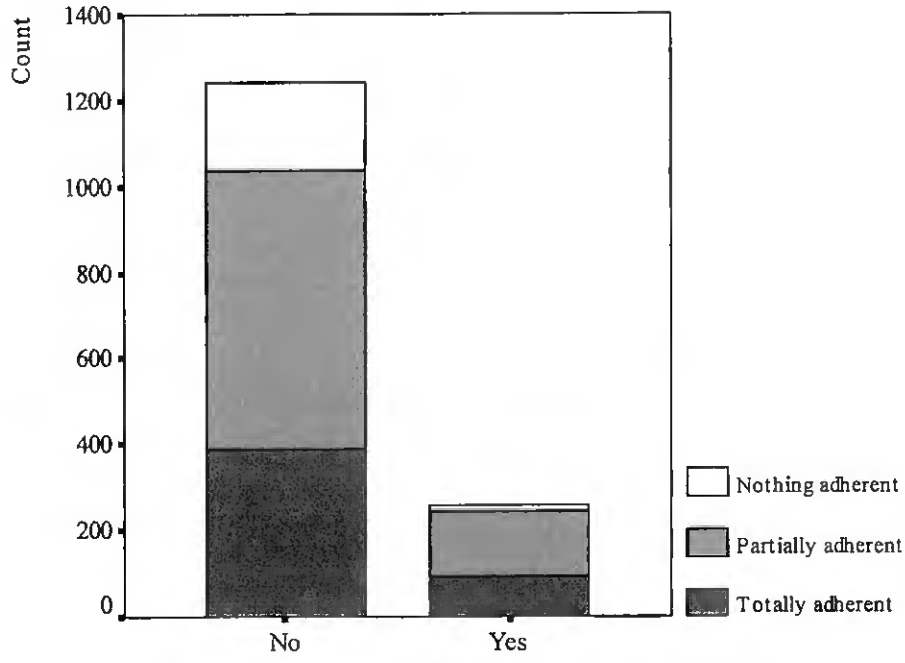
(*) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.

FIGURE I.1
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM1
(Distribution of all valid cases for the item: n = 1796)



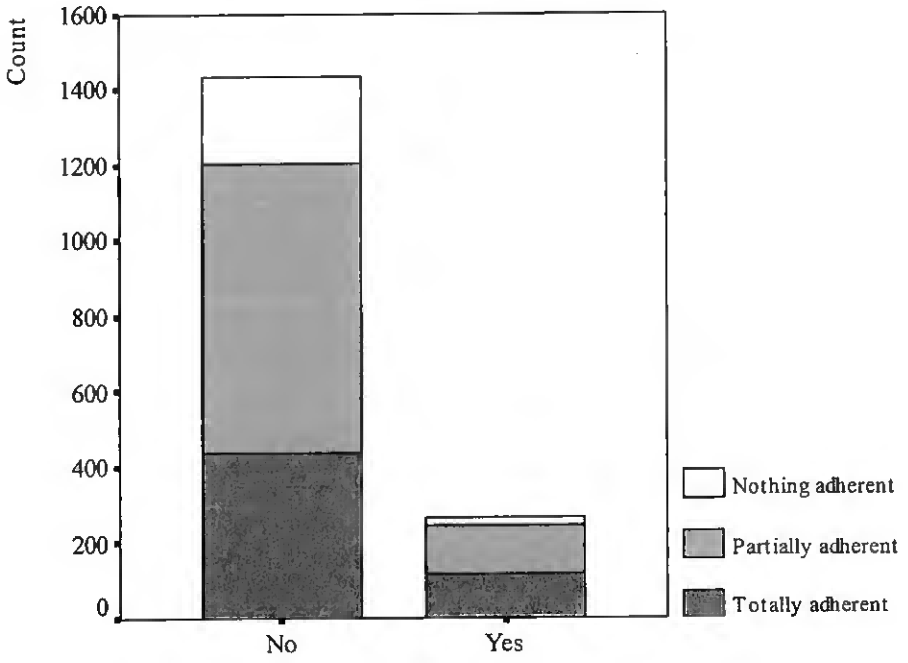
COM1 - Have you received information through mailing?

FIGURE I.2
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM1
(Distribution of cases used in HOMALS: n = 1501)



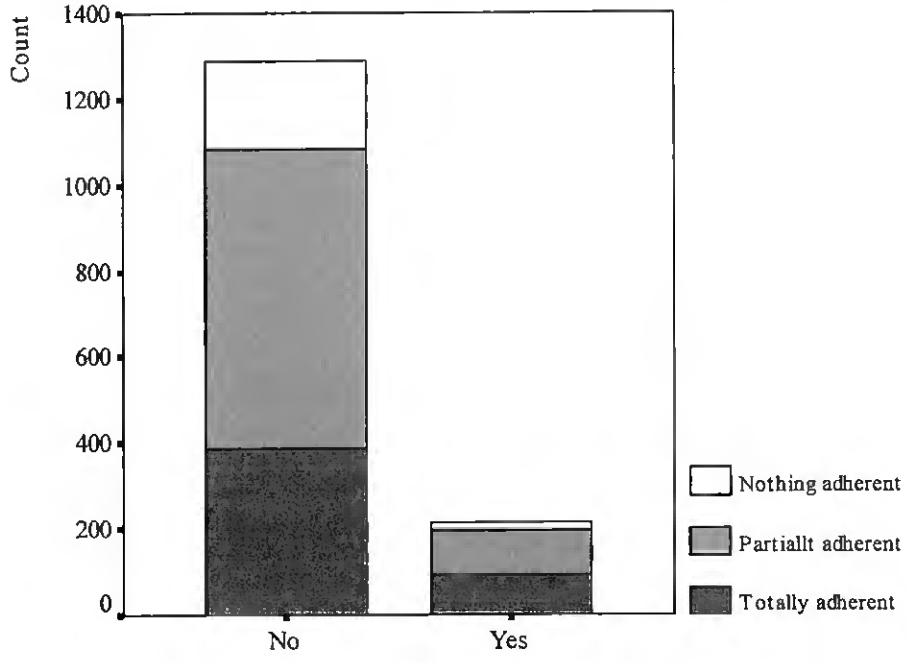
COM1 - Have you received information through mailing?

FIGURE I.3
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM2
(Distribution of all valid cases for the item: n = 1757)



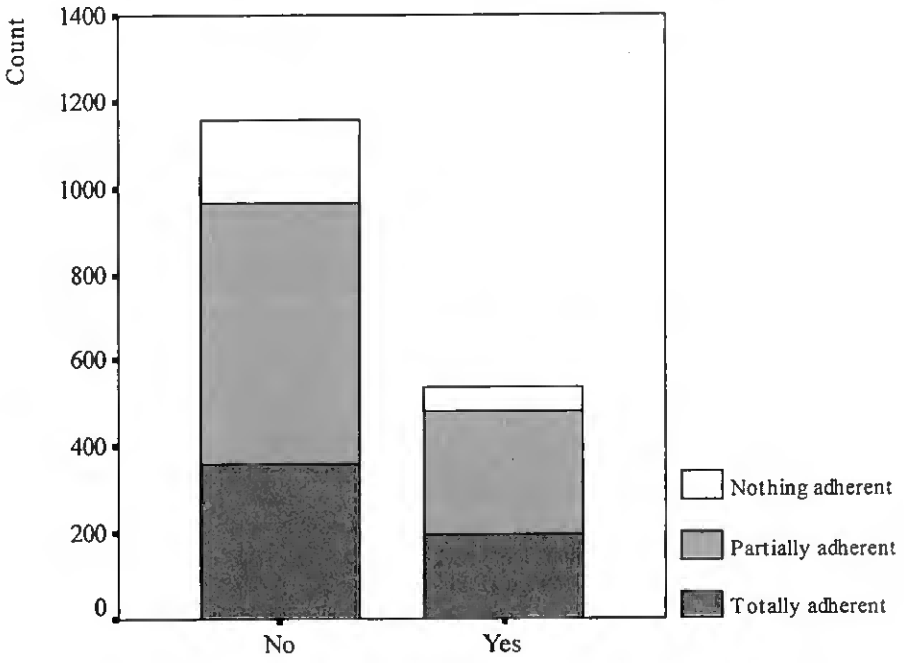
COM2 - Have you received information through leaflets?

FIGURE I.4
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM2
(Distribution of cases used in HOMALS: n = 1501)



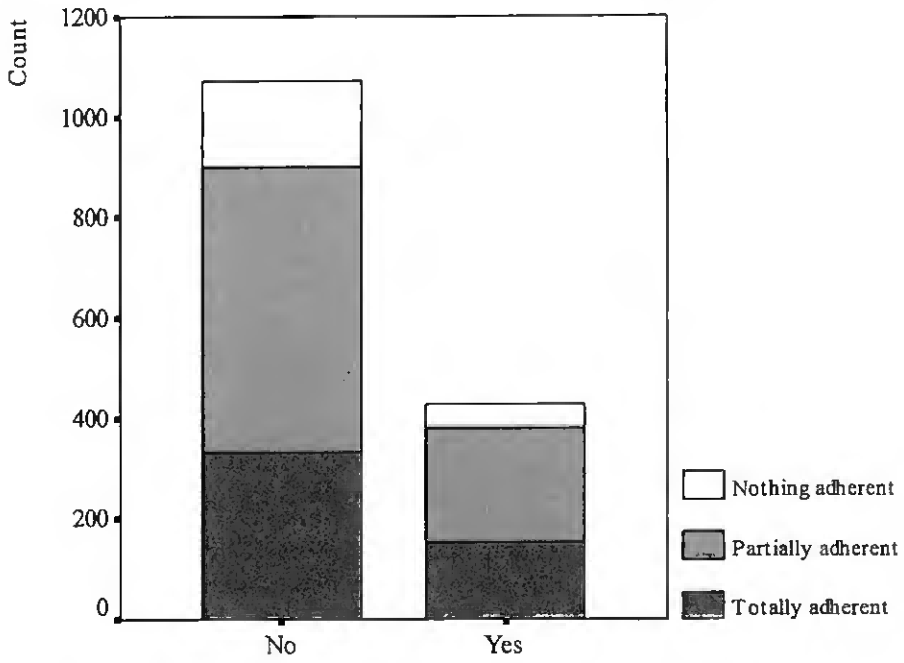
COM2 - Have you received information through leaflets?

FIGURE I.5
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM3
(Distribution of all valid cases for the item: n = 1750)



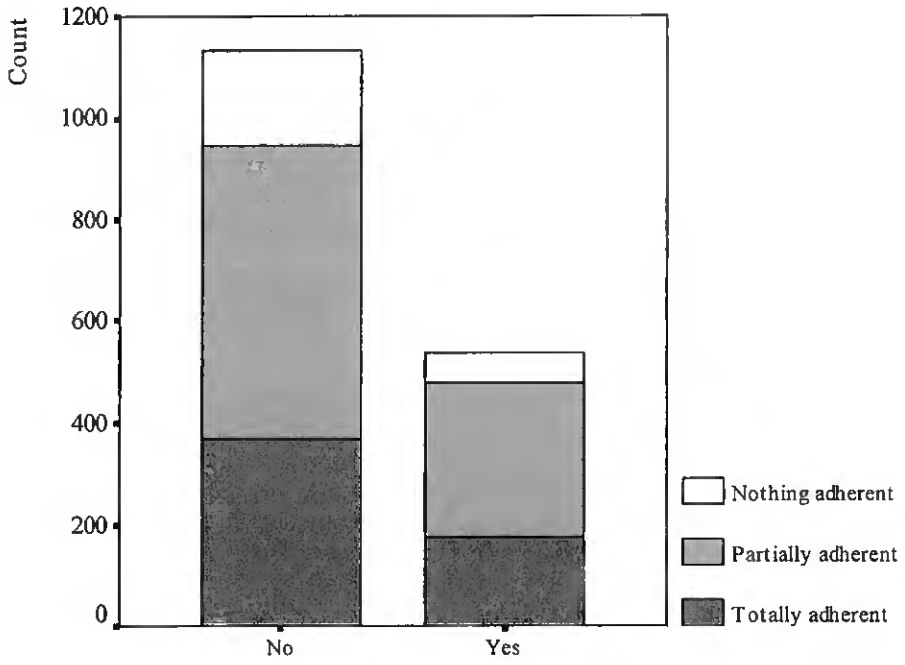
COM3 - Have you received information through magazines?

FIGURE I.6
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM3
(Distribution of cases used in HOMALS: n = 1501)



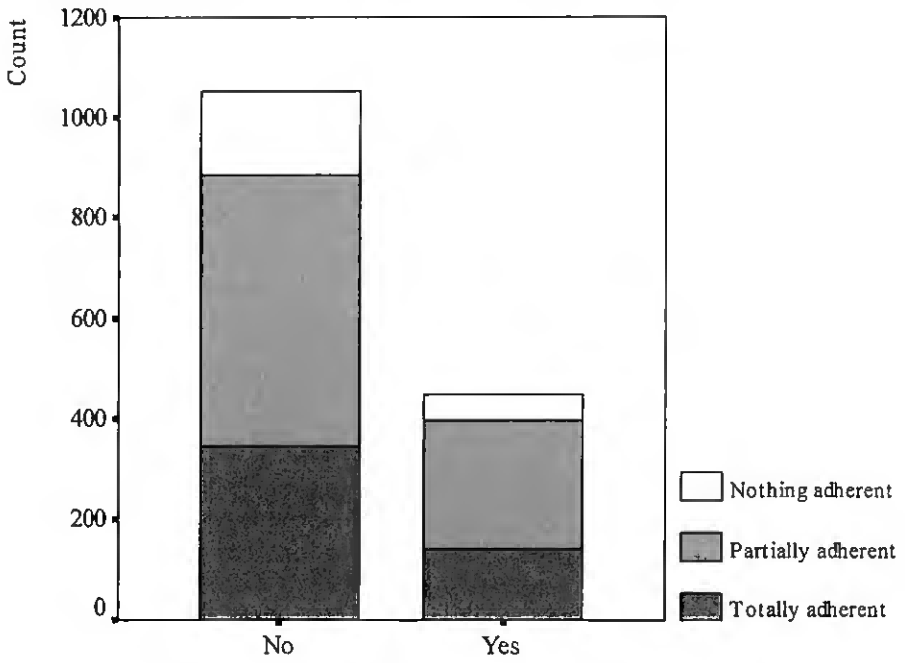
COM3 - Have you received information through magazines?

FIGURE I.7
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM4
(Distribution of all valid cases for the item: n = 1720)



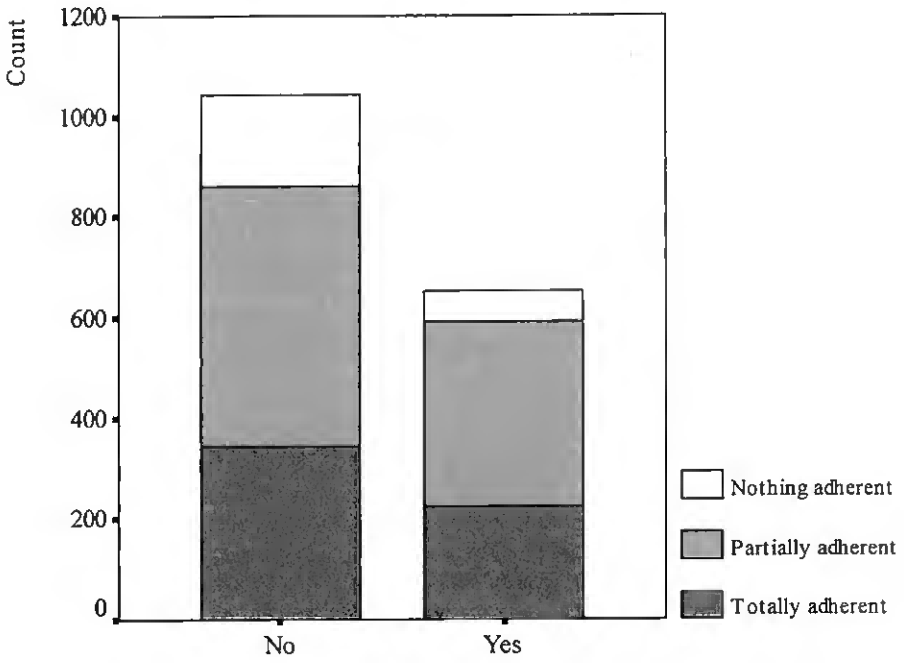
COM4 - Have you received information through billboards?

FIGURE I.8
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM4
(Distribution of cases used in HOMALS: n = 1501)



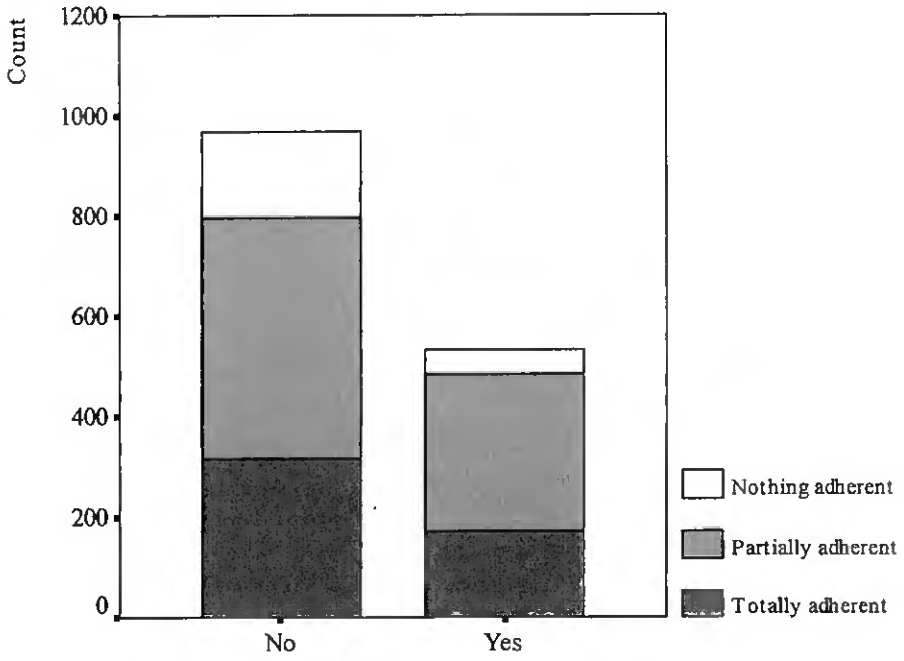
COM4 - Have you received information through billboards?

FIGURE I.9
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM5
(Distribution of all valid cases for the item: n = 1758)



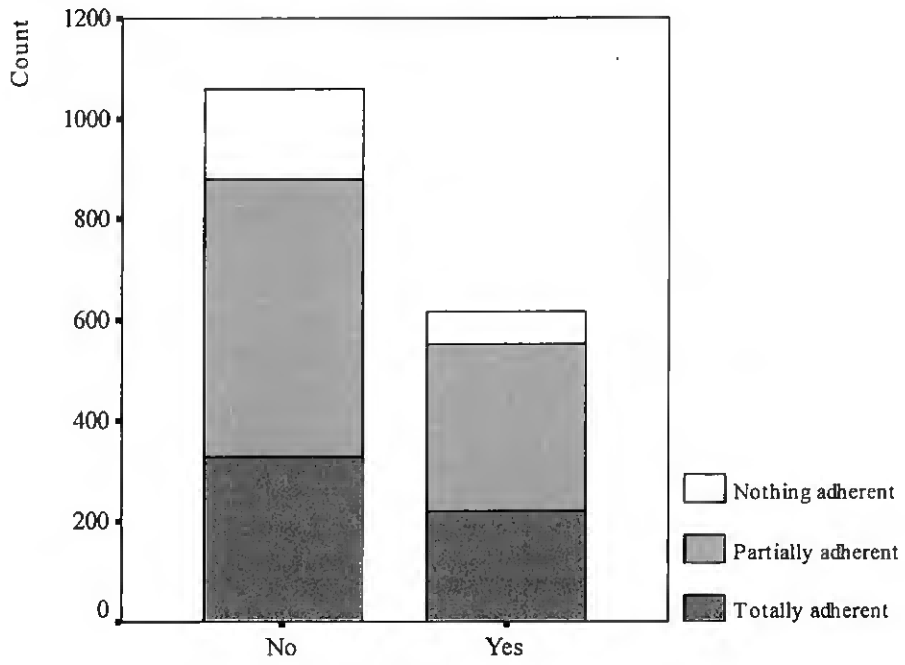
COM5 - Have you received information through municipal newspapers?

FIGURE I.10
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM5
(Distribution of cases used in HOMALS: n = 1501)



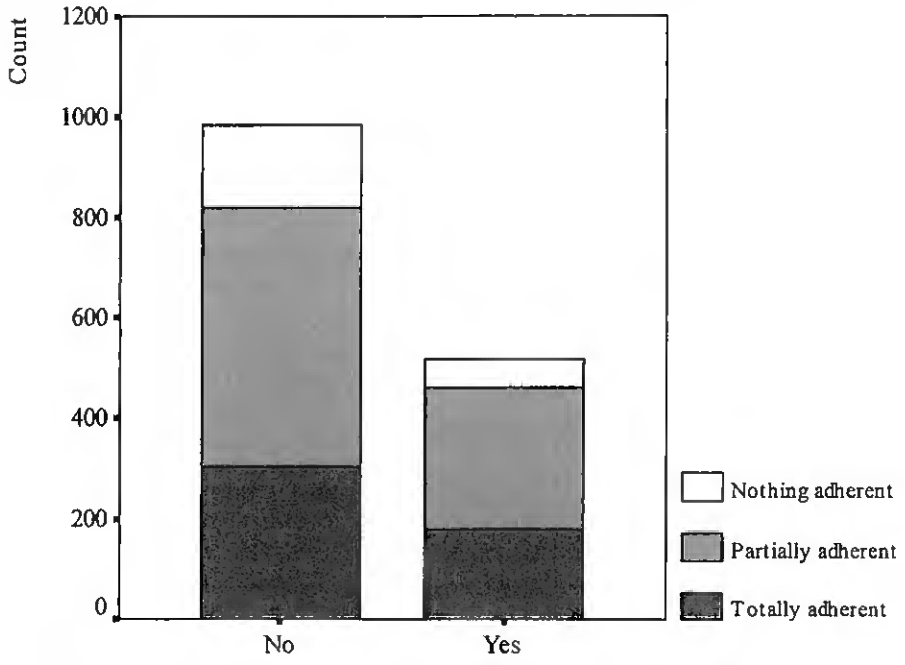
COM5 - Have you received information through municipal newspapers?

FIGURE I.11
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM6
(Distribution of all valid cases for the item: n = 1732)



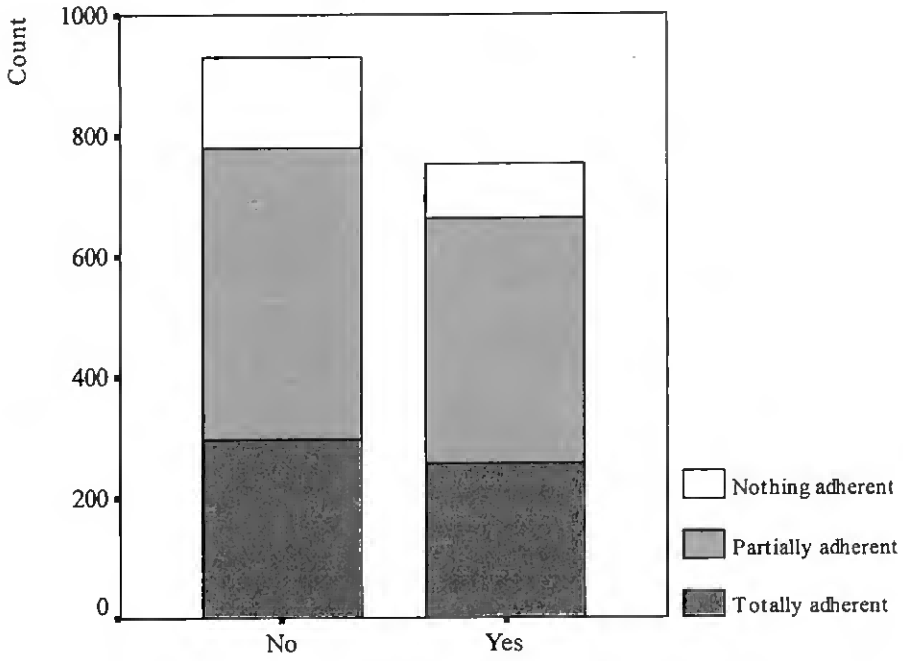
COM6 - Have you received information through daily national newspapers?

FIGURE I.12
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM6
(Distribution of cases used in HOMALS: n = 1501)



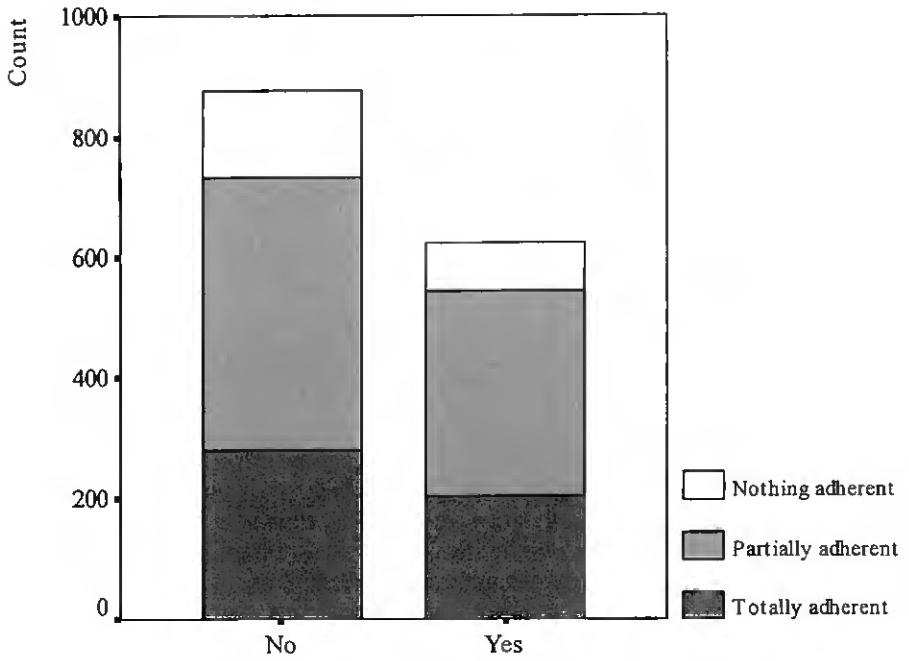
COM6 - Have you received information through daily national newspapers?

FIGURE I.13
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM7
(Distribution of all valid cases for the item: n = 1746)



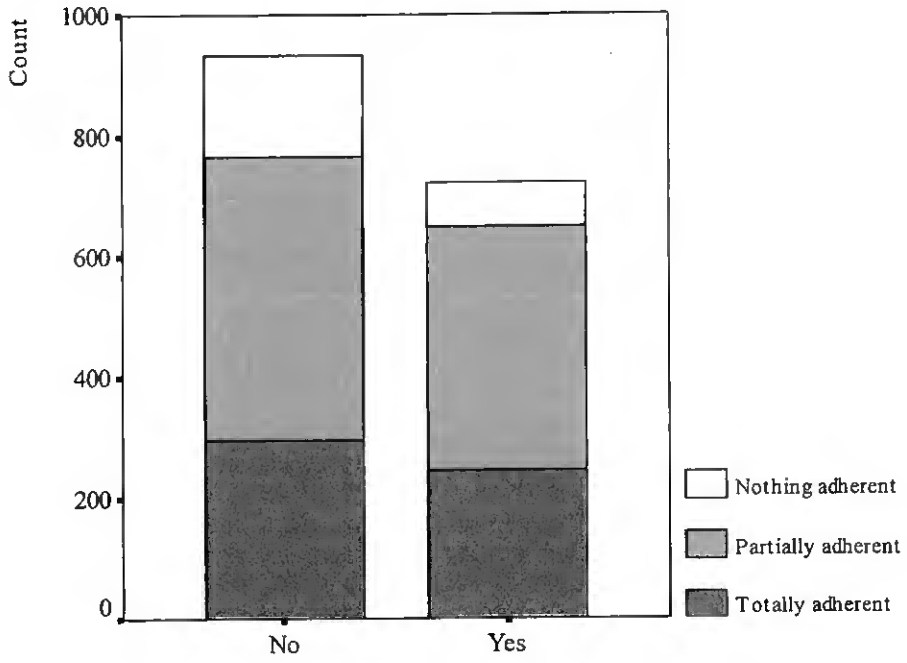
COM7 - Have youi received information through radio?

FIGURE I.14
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM7
(Distribution of cases used in HOMALS: n = 1501)



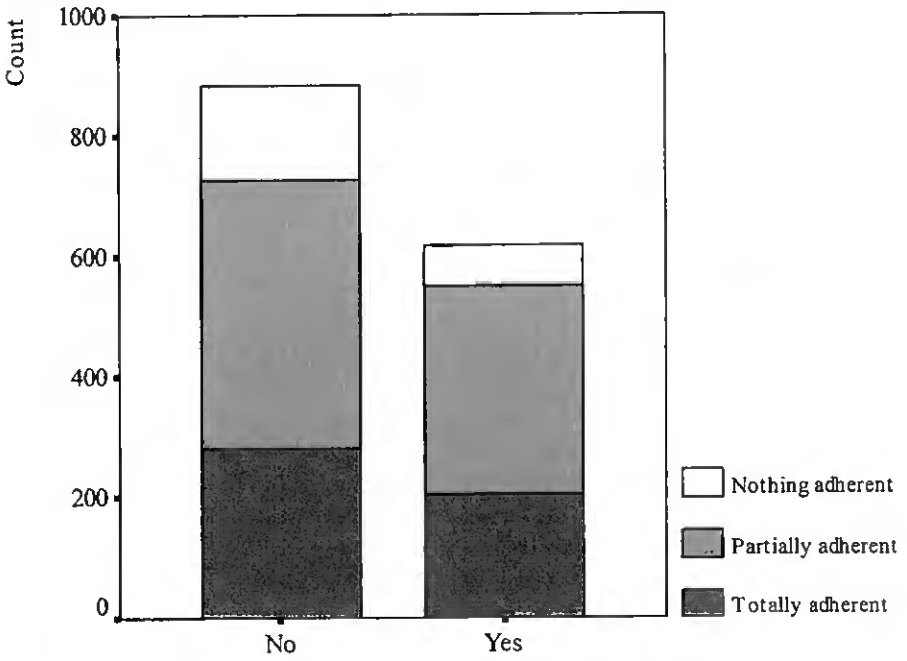
COM7 - Have you received information through radio?

FIGURE I.15
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM8
(Distribution of all valid cases for the item: n = 1712)



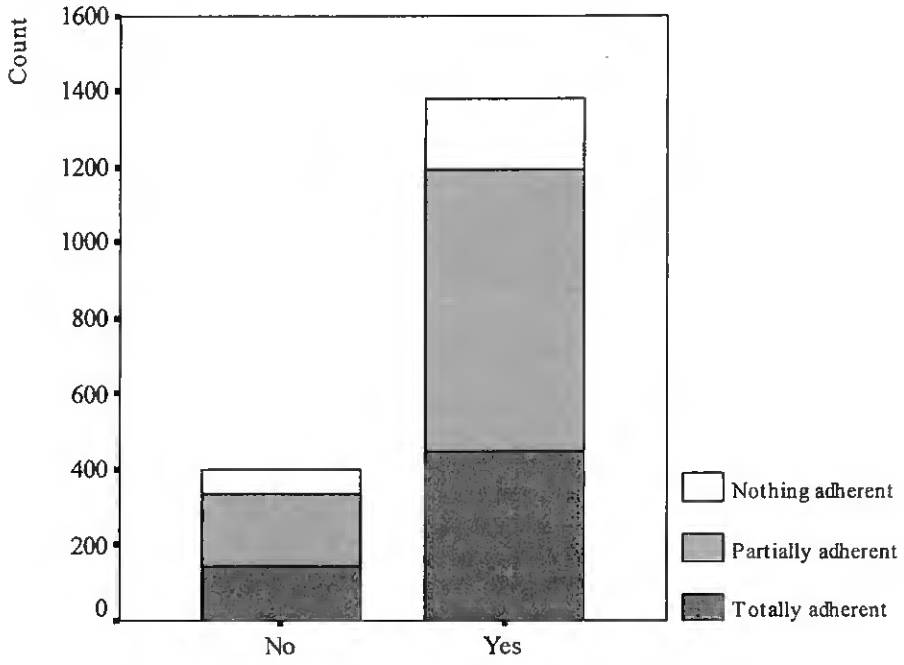
COM8 - Have you received information through "Ecopoints"?

FIGURE I.16
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM8
(Distribution of cases used in HOMALS: n = 1501)



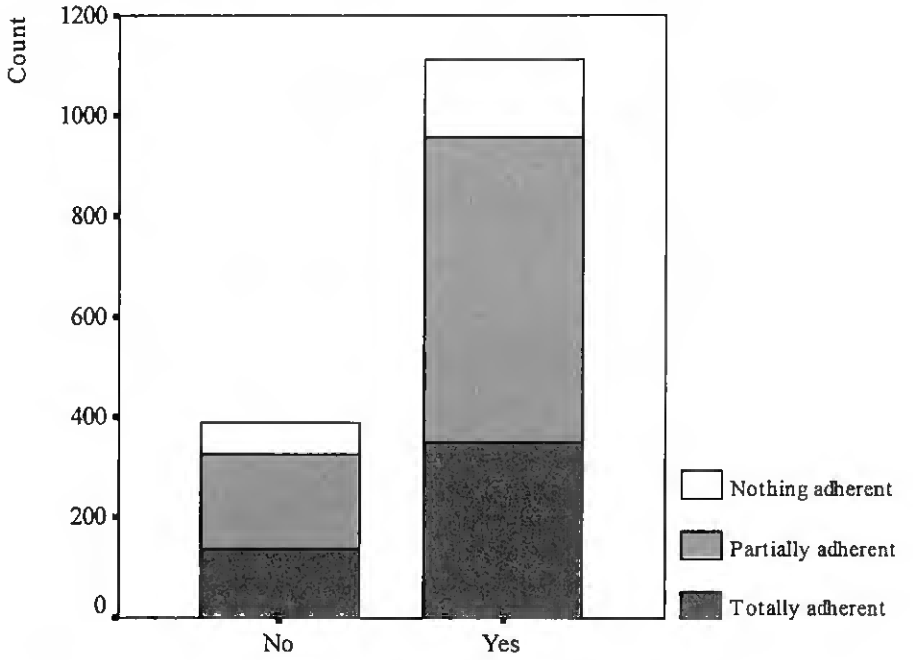
COM8 - Have you received information through "Ecopoints"?

FIGURE I.17
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM9
(Distribution of all valid cases for the item: n = 1862)



COM9 - Have you received information through TV?

FIGURE I.18
Number of nothing adherent, partially adherent and totally adherent households per category of the item COM9
(Distribution of cases used in HOMALS: n = 1501)



COM9 - Have you received information through TV?

Appendix J

ELEMENTS FROM THE INITIAL NON-RESPONSE ANALYSIS

TABLE J.1
Independent samples t-tests of equality of means: First responses versus latter responses (General environmental attitudes items)

Items	Means Difference	t	p (2-tailed)
1 – Humans are severely abusing the environment	0.0167	0.556	0.578
2 – To maintain a healthy economy, we will have to develop a "steady-state" economy where industrial growth is controlled	-0.0177	-0.569	0.570
3 – The balance of nature is very delicate and easily upset	0.0343	1.056	0.291
4 – People must live in harmony with nature to survive	-0.0384	-1.456	0.146
5 – When people interfere with nature, it often produces disastrous consequences	0.0546	1.603	0.109
6 – There are limits to growth beyond which our industrialized society cannot expand	0.0677	1.938	0.053
7 – I feel incapable to act in the environmental problems resolution attempt	0.0514	1.243	0.214
8 – I don't have a complete knowledge to act consciously in the environmental problems resolution	0.0804	2.111	0.035
9 – The environment deterioration will proceed and only afterwards something can be done	0.0232	0.502	0.616
10 – We are approaching the limit of the number of people the earth can support	0.0839	2.096	0.036
11 – Solving environmental problems will require significant lifestyle changes	0.0254	0.675	0.500
12 – Science and technology will solve our problems in the next 20 years	0.0149	0.400	0.689
13 – People have the right to modify the natural environment to suit their needs	-0.0022	-0.056	0.955

TABLE J.2
Independent samples t-tests of equality of means: First responses versus latter responses (Specific attitudes towards recycling items)

Items	Means Difference	t	p (2-tailed)
1 – My neighbors expect me to recycle household materials	-0.0182	-0.569	0.569
2 – My friends expect me to recycle household materials	-0.0231	-0.707	0.990
3 – I expect that my friends recycle household materials	-0.0571	-1.523	0.128
4 – I expect that my neighbors recycle household materials	-0.0760	-1.960	0.050
5 – My family expects me to recycle frequently my household materials	-0.0004	-0.120	0.991
6 – Household recycling is a major way to reduce lavishness	-0.0014	-0.066	0.948
7 – Household recycling is a major way to reduce litter	0.0153	0.605	0.545
8 – Household recycling is a major way to conserve energy	0.0553	1.905	0.057
9 – Household recycling is a major way to reduce pollution	0.0086	0.469	0.639
10 – Household recycling is a major way to reduce the wasteful use of land for dumps	0.0149	0.400	0.689
11 – Household recycling is a major way to conserve natural resources	-0.0073	-0.325	0.745
12 – I feel a strong personal obligation to recycle a large proportion of my household's recyclables	-0.0589	-1.666	0.096
13 – I would feel guilty if I didn't recycle regularly my household's recyclables	-0.0253	-0.722	0.471
14 – I consider that the household waste separation should be compulsory by law	-0.0091	-0.245	0.807
15 – I am willing to go blocks out of my way to recycle household materials on a regular basis	-0.0033	-0.089	0.929
16 – For me, recycling is just a matter of money: I wouldn't recycle materials I didn't get paid for	0.0112	0.638	0.523
17 – For me, to recycle household waste is a very difficult task	0.0243	0.695	0.487
18 – Almost no one I know recycles any household materials	0.0597	1.971	0.049
19 – To recycle household waste is not up to me	0.0408	1.290	0.197
20 – Households like mine are responsible for a very large part of the materials disposed of in landfills	-0.0552	-1.603	0.109

TABLE J.3
Chi-square independence tests

Variables in the crosstabulation	Pearson Chi-square value	df	p (2-tailed)
"Response in the first 30% group"(*) versus "Recycling behavior" (**)	0.041	1	0.839
"Response in the first 30% group" (*) versus "Adherence level" (***)	0.920	2	0.631

(*) This variable has two categories: *yes* and *no*.
(**) This variable corresponds to the item "the household usually separates and disposes of recyclable materials?", which has two valid answers: *yes* and *no*.
(***) This variable corresponds to the item "What is you adherence level to the selective-collection program?", which has three valid answers: *totally adherent*, *partially adherent* and *non-adherent*.

Annex A

QUESTIONNAIRE

GIESTA ISCTE

SURVEY ON CONSUMERS' MOTIVATIONS TOWARDS HOUSEHOLD PACKAGING RECYCLING

Questionnaire nº ___

I – SOCIETY AND ENVIRONMENT

1. Indicate your accordance level with the following sentences concerning the environment. Use the following answer scale:
totally disagree=1 disagree=2 agree=3 totally agree=4

1.1 When people interfere with nature, it often produces disastrous consequences ..... ___
1.2 People must live in harmony with nature to survive ..... ___
1.3 People have the right to modify the natural environment to suit their needs ..... ___
1.4 Solving environmental problems will require significant lifestyle changes..... ___
1.5 The balance of nature is very delicate and easily upset ..... ___
1.6 There are limits to growth beyond which our industrialized society cannot expand ..... ___
1.7 We are approaching the limit of the number of people the earth can support ..... ___
1.8 Science and technology will solve our problems in the next 20 years ..... ___
1.9 Humans are severely abusing the environment ..... ___
1.10 To maintain a healthy economy, we will have to develop a "steady-state" economy where industrial growth is controlled ..... ___
1.11 The environment deterioration will proceed and only afterwards something can be done..... ___
1.12 I feel incapable to act in the environmental problems resolution attempt ..... ___
1.13 I don't have a complete knowledge to act consciously in the environmental problems resolution ..... ___

2. Indicate your personal satisfaction level when you can practice the following action in your quotidian. Use the following answer scale:
Very few satisfied=1 somewhat satisfied=2 satisfied=3 very satisfied=4

2.1 Increasing ways to reduce lavishness..... ___
2.2 Promoting actions able to help improving the world..... ___
2.3 Dressing fashionably..... ___
2.4 Satisfaction in helping others ..... ___
2.5 Doing well a task for which you are responsible..... ___

II – SEPARATION OF DOMESTIC PACKAGING RESIDUES

3. Indicate your accordance level with the following sentences concerning the separation and disposition of recyclable materials. Use the following answer scale:
Totally false=1 Partially true=2 Totally true=3

3.1. Almost no one I know recycles any household materials	
3.2. My friends expect me to recycle household materials	
3.3. My neighbors expect me to recycle household materials	
3.4. I expect that my friends recycle household materials	
3.5. I expect that my neighbors recycle household materials	
3.6. I feel a strong personal obligation to recycle a large proportion of my household's recyclables	
3.7. I am willing to go blocks out of my way to recycle household materials on a regular basis	
3.8. For me, recycling is just a matter of money: I wouldn't recycle materials I didn't get paid for	
3.9. I would feel guilty if I didn't recycle regularly my household's recyclables	
3.10. My family expects me to recycle frequently my household materials	
3.11. Household recycling is a major way to:	
3.11.1. conserve natural resources	
3.11.2. reduce litter	
3.11.3. conserve energy	
3.11.4. reduce pollution	
3.11.5. reduce lavishness	
3.11.6. reduce the wasteful use of land for dumps	
3.12. Households like mine are responsible for a very large part of the materials disposed of in landfills	
3.13. For me, to recycle household waste is a very difficult task	
3.14. To recycle household waste is not up to me	
3.15. I consider that the household waste separation should be compulsory by law	

4. Do you know the location in your residence area of:

4.1. The ecopoint	Yes o	No o	It doesn't exist o	I don't know that equipment o
4.2. Only the glass container	Yes o	No o	It doesn't exist o	I don't know that equipment o
4.3. Only the paper container	Yes o	No o	It doesn't exist o	I don't know that equipment o

5. How long does your residence area have specific equipment for selective-collection for recycling?
   a. Glass container _____ b. Paper container _____ c. Ecopoint _____

6. The household usually separates and disposes of recyclable materials?
   Yes o No o

6.1. With what frequency do you dispose of the separated residues in the suitable containers?

6.1.1. In the glass container	Every day o	3 to 6 times a week o	1 a 2 times a week o	Once in the while o	Never o
6.1.2. In the paper container	Every day o	3 to 6 times a week o	1 a 2 times a week o	Once in the while o	Never o
6.1.3. in the ecopoint	Every day o	3 to 6 times a week o	1 a 2 times a week o	Once in the while o	Never o

6.2. Among the following materials, which ones should be separated and disposed of for recycling?

Type of materials	Separate and dispose of?	What materials are disposed of at: The glass containers	The paper containers	The packaging containers
a) Porcelains	Yes o No o	o	o	o
b) Bottles and other glass packaging	Yes o No o	o	o	o
c) Paper /cardboard packaging	Yes o No o	o	o	o
d) Metal packaging	Yes o No o	o	o	o
e) Piles	Yes o No o	o	o	o
f) Plastic packaging for butter, yoghurts, etc.	Yes o No o	o	o	o
g) Newspapers and magazines	Yes o No o	o	o	o
h) Cans	Yes o No o	o	o	o
i) Clothes	Yes o No o	o	o	o
j) Metal scrap	Yes o No o	o	o	o
k) Painted paper	Yes o No o	o	o	o
l) Food	Yes o No o	o	o	o
m) Syringes	Yes o No o	o	o	o
n) Mirror	Yes o No o	o	o	o
o) Milk or juice packaging	Yes o No o	o	o	o
p) Dishes	Yes o No o	o	o	o
q) Aluminum paper	Yes o No o	o	o	o
r) Wrap up paper	Yes o No o	o	o	o
s) Plastic packaging	Yes o No o	o	o	o
t) Plastic bags	Yes o No o	o	o	o

6.3. What importance level do you ascribe to the following motives for separating and disposing of recyclable materials? Use the following answer scale:

not important=1 little important=2 important=3 very important=4

	Glass	Paper/ cardboard	Metal /Plastic
6.3.1. Help to conserve the natural resources and the environment (less waste/ pollution)			
6.3.2. Reduce the wasteful use of land for dumps			
6.3.3. Participate in actions that can bring benefits for the community			
6.3.4. Because it's easy to do it			
6.3.5. Helping to solve a national problem			
6.3.6. Habits			
6.3.7. Because my neighbors do it			
6.3.8. Because my fiends do it			
6.3.9. Because my family pressures me to do it			
6.3.10. For conviction			
6.3.11. Because money can be saved (waste is money)			

6.4. Do you feel globally satisfied with the selective-collection service in your residence area? Yes o No o

6.5. Indicate your satisfaction level with the following aspects concerning the selective-collection of recyclable materials. Use the following answer scale:

not satisfied=1 little satisfied=2 satisfied =3 very satisfied =4

	Glass container	Paper container	Packaging container
6.5.1. Information availability			
6.5.2. Support and claim service			
6.5.3. System adequacy to lifestyle			

		Glass container	Paper container	Packaging container
6.5.4.	Number and type of accepted waste materials			
6.5.5.	Distance to the disposal containers			
6.5.6.	Emptying regularity			
6.5.7.	Disposal containers location			
6.5.8.	Cleaning and maintenance			
6.5.9.	Local safety			
6.5.10.	Number of disposal containers			
6.5.11.	Frequency of waste collection			

III– Motives for not Separating Domestic Packaging Residues

7. If you don't separate packaging residues or you feel a great difficulty in separating or even if you don't selectively dispose of your recyclable packaging, please indicate the importance you ascribe to the following motives for not having these behaviors. Use the following answer scale:

not important=1 **little important=2** **important=3** **very important=4**

Motives for not separating domestic packaging residues →	**In the glass container**	**In the paper container**	**In the packaging container**
7.1. I don't have time to separate, store and selectively dispose of the recyclable residues			
7.2. I don't have information about how the materials should be separated			
7.3. I don't know what materials should be separated			
7.4. If have a physical difficulty to go the disposal locations			
7.5. The container for selective-collection are too distant of my residence			
7.6. I don't know where I should deliver the recyclable materials			
7.7. There isn't sufficient containers for selective-collection in my residence area			
7.8. The places for selective disposal don't have hygiene conditions			
7.9. The places for selective disposal are always filled up			
7.10. The places for selective disposal are very banished			
7.11. The places for selective disposal are not safe			
7.12. I'm not paid for recycling			
7.13. I always forget to separate the waste			
7.14. I don't yield sufficient waste to justify its separation			
7.15. I've never thought about that			
7.16. I don't care about that			
7.17. It doesn't make any difference whether or not I recycle			
7.18. I don't have space in my kitchen (nor in any other place in my house) to separate the waste			
7.19. Keeping waste in home is not hygienic			
7.20. No one that I know separates the waste			
7.21. Waste can go to the recycling process through the traditional collection systems			
7.22. I don't feel able to separate and dispose of the recyclable materials			
7.23. It's not possible to complaint or the complaints are not taken into account			

8. Do you have the intention of separating your household's waste in the future and disposing it in:
   8.1. The glass containers: Yes o No o I don't know o
   8.2. The paper containers: Yes o No o I don't know o
   8.3. The ecopoints: Yes o No o I don't know o

IV– Incentives for Separating Domestic Packaging Residues

9. Please classify the following proposals concerning their potential in encouraging non-recyclers to begin participating. Use the following answer scale:

not important=1 **little important=2** **important=3** **very important=4**

9.1. Have friends and neighbors' support ____
9.2. To know that friends and neighbors participate in the recycling program ____
9.3. Have family support in separating recyclable waste ____
9.4. Have specific information about how, when and what materials should be separated ____
9.5. Have information about all the recycling process ____
9.6. Have information about the local and national recycling results ____
9.7. To punish those who don't participate in the recycling program ____
9.8. Receive a monetary reward for participating in the recycling program ____
9.9. Know that highly considered personalities participate in the recycling program ____

9.10. Have a door-to-door collection method for recyclable materials ____
9.11. Have a drop-off collector near household residence ____
9.12. To keep the drop-off collectors clean ____
9.13. Put the drop-off collectors in a pleasant and safe place ____
9.14. Empty the drop-off collectors regularly ____

10. After what distance from the disposal containers (for ex, ecopoints) would you leave off participating in the recycling program?

5 meters o 35 meters o 100 meters o 300 meters o 400 meters o 800 meters o 1600 meters o

11. Sometimes there are residues disposed of in the wrong containers. Do you think this problem is caused by::

11.1. Mistake	Yes o	No o	I don't know o
11.2. Complexity of the recycling program	Yes o	No o	I don't know o
11.3. Lack of information	Yes o	No o	I don't know o
11.4. Lack of time	Yes o	No o	I don't know o
11.5. Carelessness	Yes o	No o	I don't know o

12. Please sign the media through which you had received information about selective collection and recycling, and indicate the importance and satisfaction you ascribe to the received message by each one. Use the previous scales of 1 to 4 for importance and satisfaction.

Did you receive information by means of:	12.1. Did you receive already?	12.2. What importance level do you ascribe to each of the media?	12.3. What is your satisfaction level concerning each of the media?	12.4. Would you like to receive more information through each media?
a) *Mailing*	Yes o No o			Yes o No o
b) Leaflets	Yes o No o			Yes o No o
c) Magazines	Yes o No o			Yes o No o
d) Billboards	Yes o No o			Yes o No o
e) Blue bags/ other type of bags	Yes o No o			Yes o No o
f) Municipal or regional newspapers	Yes o No o			Yes o No o
g) National daily newspapers	Yes o No o			Yes o No o
h) Radio	Yes o No o			Yes o No o
i) Television	Yes o No o			Yes o No o
j) Ecopoints	Yes o No o			Yes o No o
k) Others. Please specify: _____	Yes o No o			Yes o No o

13. How do you classify your household concerning the separation and disposition of recyclable materials? :

13.1. **Adherent to these behaviors:** Totally o Partially o Non-adherent o
13.2. **Competent for having these behaviors:** Totally o Partially o Non-competent o
13.3. **Motivated for having these behaviors:** Totally o Partially o Non-motivated o

14. What is your identification level with the following groups / leaders. Use the following scale :

I don't belong=1 I belong but it doesn't matter for me=2 I belong and that is important for me=3 I belong and that is very important for me=4

a) Young people.... ____
b) Old people.... ____
c) Women.... ____
d) Family.... ____
e) Region (por ex. North, South, Center).. ____
f) Profession.... ____
g) Environmentalists.... ____
h) Europeans.... ____
i) Portuguese citizens.... ____
j) Sports/ recreation club.... ____
k) Religious.... ____
l) Politician.... ____
m) Artistic.... ____
n) Managers.... ____
o) Trade-unions.... ____
p) Schools where you had studied .... ____

V– ENVIRONMENTALLY FRIENDLY CONSUMPTION

15. Next, the attributes of some daily products are presented. Please, indicate the importance level you ascribe to each of these attributes concerning your **buying decision**. Use the following answer scale:

not important=1
little important=2
important=3
very important=4

15.1. Biodegradable.... ____
15.2. Produced by environmentally friendly processes.... ____
15.3. Produced with recycled materials.... ____
15.4. Not toxic/ dangerous.... ____
15.5. Produced by companies that support the environment ____
15.6. Produced without pesticides .... ____
15.7. Not tested in animals.... ____
15.8. Produced with materials that don't come from animals .... ____
15.9. Not genetically manipulated.... ____

16. Please indicate your agreement level with the following sentences concerning **packaging**. Use the following answer scale:

totally disagree=1
disagree=2
agree=3
totally agree=4

16.1. Packaging must be used at a minimum.... ____
16.2. Packaging are essential.... ____
16.3. I appreciate the aesthetics and easy usage of packaging .... ____
16.4. I don't care with the amount of packaging in a product .... ____
16.5. I avoid buying products with lots of packaging.... ____

16.5. I avoid buying products with lots of packaging..... ____
16.6. I appreciate the information on packaging ..... ____
16.7. I prefer products with recyclable or reusable packaging..... ____

16.8. Packaging should inform how to separate and dispose of the residues ..... ____

17. What color do you associate with each of these types of materials in the equipments available for the selective-collection for recycling?

Types of materials	Color
Glass	
Paper / cardboard	
Metal	
Plastic	

18. Do you know the symbol **GREEN POINT ?**

Yes o

No o

18.1. Of the following sentences, which one properly defines **GREEN POINT** (choose only one of the 5 sentences)

a. Packaging with this symbol are returned to their producers for being reused o
b. Packaging with this symbol have recycled materials o
c. Companies that trade products with this symbol contribute for an integrated program of selective-collection for recycling o
d. Packaging with this symbol can be recycled o
e. Packaging with this symbol can be selectively collected o

VI. Characterization of the Respondent and of the Household

We would like to have some information about your social-demographic characteristics and of your household.

1. What is your residence type? Own/Are buying o Renting o Familiar o
   a. House o
   b. Farm o
   c. Apartment o
      1.1. Ground-floor o Superior floor o 1.2. Type: T0 o T1 o T2 o T3 o T4 o T5 or larger o
      1.3. Is there any management condominium for the building? Yes o No o
      1.4. Is this management condominium reasonably effective? Yes o No o
      1.5. Is there any available space to provisionally store the recyclable materials?
      1.5.1. In the apartment Yes o No o
      1.5.2. in the building Yes o No o

2. In your building there is:
   a. Specific space for garbage? Yes o No o
   b. Garbage conduit? Yes o No o
   c. Someone who is responsible for disposing of the garbage? Yes o No o

3. How many garbage bags your household produces, on average, a day? _____

4. In your residence there is: a. Radio o b. Television o c. Computer o d. Internet o e. Car o f. Cell phone o

5. How many hours a day do you spend a. watching television? ____ b. listening to the radio? _____ c. reading newspapers?_____

6. Do you use to read the advertisements that are put in your mail box? Yes o No o

7. Is the respondent the responsible for the household (for fiscal purposes)? Yes o No o

8. What is your education level?

a. 4 years	o
b. 6 years	o
c. 9 years	o
d. 12 years	o
e. Technical -professional (equiv. to 9 years)	o
f. Technical -professional (equiv. to 12 years)	o
g. Superior (not college)	o
h. Superior (college)	o

8.1. What is education level of the responsible for the household?

a. 4 years	o
b. 6 years	o
c. 9 years	o
d. 12 years	o
e. Technical -professional (equiv. to 9 years)	o
f. Technical -professional (equiv. to 12 years)	o
g. Superior (not college)	o
h. Superior (college)	o

9. What is your nationality?
   Portuguese o
   Other o Please, specify: _____

8.2. What is relationship with the responsible for the household? _____

10. Are you an emigrant? Yes o No o

11. What is your ethnical origin? European o African o Asiatic o Latin-American o Gipsy o

12. Please, indicate your household composition by specifying your relationship with each household element. Please, also indicate their profession, marital status, age and gender..

Household composition	Profession	Marital status	Age	Gender
Respondent				
Consort				
Father				
Mother				
Sons				
Others. Please, specify:				

13. In your household, who is responsible for:

	The respondent	The consort	Both	Others. Who?
a. Earning most of the household income?	o	o	o	o _____
b. The household tasks?	o	o	o	o _____
c. The home shopping?	o	o	o	o _____
d. Cooking most of the meals?	o	o	o	o _____
e. For disposing of the garbage?	o	o	o	o _____
f. For separating the packaging residues?	o	o	o	o _____
g. For disposing of the packaging residues?	o	o	o	o _____

14. What is the monthly family household income (liquid in "contos")?

Less than 64 o 64 a 99 o 100 a 199 o 200 a 399 o 400 a 599 o At least 600 o

16. Addition comments you would like to do concerning the subject of this survey:

_____

_____

_____

_____

Thank you very much for your participation

Interviewer: _____ **Date:** ___ /___ / 2000 **Hour:** ___ h ___ m

Phone number: _____

Observations: _____

_____

_____

_____

_____

_____

_____

GIESTA ISCTE

INQUÉRITO RELATIVO AO COMPORTAMENTO SOBRE LIXOS DOMÉSTICOS

Questionário nº ____

Instruções para o preenchimento deste questionário:

- Por favor, responda a todas as perguntas assinalando com uma **X** no quadrado respectivo ou escrevendo o número que corresponde à sua resposta, numa escala de 1 a 4.
- Procure responder de acordo com as suas opiniões próprias e com a prática do seu agregado familiar; se necessário, peça ajuda ao seu conjuge ou parceira(o) para que as respostas indiquem, tanto quanto possível, o comportamento do seu agregado familiar.
- Se não souber responder a alguma das perguntas, deixe-a em branco e passe à pergunta seguinte.

I – Sociedade e Ambiente

1. Indique o seu nível de concordância relativamente às seguintes afirmações respeitantes ao ambiente. Utilize a seguinte escala de respostas:
discordo totalmente=1 discordo=2 concordo=3 concordo plenamente=4

1.1 Quando o homem interfere com a natureza frequentes vezes, os efeitos são desastrosos..... ____
1.2 O homem deve viver em harmonia com a natureza para sobreviver..... ____
1.3 O homem tem o direito de modificar o ambiente para garantir as suas necessidades..... ____
1.4 Resolver problemas ambientais requer mudanças no estilo de vida de cada um..... ____
1.5 O equilíbrio da natureza é muito delicado e é fácil atingir a ruptura..... ____
1.6 Há limites ao crescimento para além dos quais a sociedade industrializada não se pode expandir..... ____
1.7 Estamos a aproximar-nos do limite de pessoas que o planeta pode suportar..... ____
1.8 A ciência e a tecnologia resolverão os nossos problemas nos próximos 20 anos..... ____
1.9 A sociedade está a abusar fortemente do ambiente..... ____
1.10 Para desenvolver uma economia saudável é necessário desenvolver um Estado forte onde o crescimento industrial seja controlado..... ____
1.11 O ambiente vai continuar a deteriorar-se até ser insuportável e só depois é que é possível fazer alguma coisa... ____
1.12 Sinto-me impotente para actuar na resolução dos problemas do ambiente..... ____
1.13 Não considero ter suficiente conhecimento para actuar de forma informada nas questões ambientais..... ____

2. Indique o seu nível de **satisfação** pessoal quando consegue no dia-a-dia praticar as seguintes acções; utilize a seguinte escala de respostas:
muito pouco satisfeito=1 pouco satisfeito=2 satisfeito=3 muito satisfeito=4

2.1 Aumentar as formas de evitar o desperdício..... ____
2.2 Desenvolver acções que possam ajudar a modificar o mundo.. ____
2.3 Andar vestido à moda..... ____
2.4 Ajudar os outros..... ____
2.5 Fazer bem uma tarefa de que foi incumbido..... ____

II – Separação dos Lixos Domésticos

3. Indique o seu nível de concordância, agora relativamente às seguintes afirmações respeitantes especificamente à separação dos lixos domésticos e colocação dos mesmos em locais apropriados para reciclagem. Utilize a seguinte escala de respostas:
Totalmente falso=1 Parcialmente verdadeiro=2 Totalmente verdadeiro=3

3.1. Quase ninguém que eu conheça separa os lixos domésticos	
3.2. Os meus amigos esperam que eu separe os lixos domésticos	
3.3. Os meus vizinhos esperam que eu separe os lixos domésticos	
3.4. Eu espero que os meus amigos separem os lixos domésticos	
3.5. Eu espero que os meus vizinhos separem os lixos domésticos	
3.6. Eu sinto uma forte obrigação pessoal em separar grande quantidade dos meus lixos domésticos	
3.7. Eu estou disposto a deslocar-me alguns quarteirões para colocar as embalagens do meu lixo regularmente num depósito específico (ex. ecoponto)	
3.8. A separação dos lixos é uma questão de dinheiro e eu só o faço se for pago para isso	
3.9. Eu sinto-me culpado se não separar com regularidade os meus lixos domésticos	
3.10. A minha família pensa que eu devo separar com regularidade os lixos domésticos	
3.11. A separação e reciclagem dos lixos domésticos é uma forma ideal para:	
3.11.1. Conservar os recursos naturais	
3.11.2. Reduzir os lixos	
3.11.3. Conservar energia	
3.11.4. Reduzir a poluição	
3.11.5. Reduzir o desperdício	
3.11.6. Reduzir a utilização de terrenos para aterros sanitários	
3.12. Agregados familiares como o meu são responsáveis por produzirem uma parte significativa dos materiais/lixo colocados em aterros sanitários	
3.13. Separar os lixos domésticos é uma dificuldade para mim	
3.14. Separar os lixos domésticos não é comigo	
3.15. Eu considero que a separação dos lixos domésticos em casa deveria ser obrigatória por lei	

4. Conhece a localização na sua área:

4.1. Do ecoponto (conjunto de 3 contentores)	Sim o	Não o	Não existe o	Desconheço este equipamento o
4.2. Apenas do vidrão	Sim o	Não o	Não existe o	Desconheço este equipamento o
4.3. Apenas do papelão	Sim o	Não o	Não existe o	Desconheço este equipamento o

5. Há quanto tempo tem à sua disposição na sua área, para recolha selectiva, equipamentos localizados?

a. Vidrão _____ b. Papelão _____ c. Ecoponto _____

6. O seu agregado familiar tem por hábito separar os lixos domésticos e colocá-los nos locais apropriados para serem posteriormente recolhidos e reciclados (no vidrão, palelão ou ecoponto)?

Sim o Não o

6.1. Com que frequência os lixos separados do seu agregado familiar são colocados nos locais apropriados?

6.1.1. No vidrão	Todos os dias o	3 a 6 vezes/semana o	1 a 2 vezes/semana o	De vez em quando o	Nunca o
6.1.2. No papelão	Todos os dias o	3 a 6 vezes/semana o	1 a 2 vezes/semana o	De vez em quando o	Nunca o
6.1.3. No ecoponto	Todos os dias o	3 a 6 vezes/semana o	1 a 2 vezes/semana o	De vez em quando o	Nunca o

6.2. De entre os materiais abaixo indicados, quais são separados e em que local são colocados para posterior reciclagem?

Tipo de materiais	Separa e coloca?		Dos materiais referidos indique os que são colocados: No vidrão	No palelão	No embalão
a) Porcelanas	Sim o	Não o	o	o	o
b) Garrafas/frascos de vidro	Sim o	Não o	o	o	o
c) Embalagens de papel/cartão	Sim o	Não o	o	o	o
d) Embalagens de metal	Sim o	Não o	o	o	o
e) Pilhas	Sim o	Não o	o	o	o
f) Embalagens de plástico (manteiga, iogurtes, etc)	Sim o	Não o	o	o	o
g) Jornais e revistas	Sim o	Não o	o	o	o
h) Latas de conserva	Sim o	Não o	o	o	o
i) Roupa	Sim o	Não o	o	o	o
j) Ferro-velho	Sim o	Não o	o	o	o
k) Papel pintado	Sim o	Não o	o	o	o
l) Restos de comida	Sim o	Não o	o	o	o
m) Seringas	Sim o	Não o	o	o	o
n) Espelhos	Sim o	Não o	o	o	o
o) Embalagens de leite/sumos	Sim o	Não o	o	o	o
p) Loiça	Sim o	Não o	o	o	o
q) Papel de alumínio	Sim o	Não o	o	o	o
r) Papel de embrulho	Sim o	Não o	o	o	o
s) Latas de bebidas	Sim o	Não o	o	o	o
t) Garrafas e frascos de plástico	Sim o	Não o	o	o	o
u) Sacos de plástico	Sim o	Não o	o	o	o

6.3. Que importância atribui a cada um dos seguintes motivos como razões para separar os lixos domésticos e colocá-los nos locais apropriados para reciclagem. Utilize a seguinte escala de respostas:

nada importante=1 pouco importante=2 importante=3 muito importante=4

	Vidro	Papel/Cartão	Metal /Plástico
6.3.1. Contribuir para a conservação dos recursos naturais e do ambiente (menos lixo/poluição)			
6.3.2. Reduzir a utilização de terrenos para aterros sanitários			
6.3.3. Participar em acções para o bem da comunidade/concelho			
6.3.4. Facilidade em fazê-lo			
6.3.5. Ajudar a resolver um problema nacional			
6.3.6. Por hábito			
6.3.7. Porque os meus vizinhos o fazem			
6.3.8. Porque os meus amigos o fazem			
6.3.9. Porque a minha família me pressiona a fazê-lo			
6.3.10. Por convicção			
6.3.11. Porque se poupa dinheiro (lixo é dinheiro)			

6.4. Considera-se globalmente satisfeito com o serviço de recolha selectiva dos lixos domésticos existentes na sua área? Sim o Não o

6.5. Indique o seu grau de satisfação relativamente a cada um dos seguintes aspectos referentes à recolha selectiva e de lixos domésticos. Utilize a seguinte escala de respostas:

nada satisfeito =1 pouco satisfeito=2 satisfeito =3 muito satisfeito=4

	Vidrão	Papelão	Embalão
6.5.1. Informação disponibilizada			
6.5.2. Serviço de apoio e reclamações			
6.5.3. Adequabilidade do sistema ao estilo de vida			

		Vidrão	Papelão	Embalão
6.5.4.	Número e tipo de resíduos aceites			
6.5.5.	Distância ao local de depósito/equipamento			
6.5.6.	Regularidade do esvaziamento do depósito/equipamento			
6.5.7.	Localização do local de depósito / equipamento			
6.5.8.	Limpeza e manutenção do depósito/equipamento e local adjacente			
6.5.9.	Segurança no local de depósito/equipamento			
6.5.10.	Número (quantidade) de pontos de depósito/equipamento			
6.5.11.	Frequência de recolha do depósito/equipamento			

III– Motivos Para Não Separar os Lixos Domésticos

7. Se **não separa**, se deixou de separar, ou se tem grande dificuldade em separar os resíduos em sua casa e **não os coloca** em locais onde possam posteriormente ser recolhidos selectivamente e reciclados, indique o grau de importância que atribui aos seguintes motivos para esse seu comportamento. Utilize a seguinte escala de respostas:

nada importante=1 **pouco importante=2** **importante=3** **muito importante=4**

Motivos para não colocar os lixos domésticos ⟶	**No vidrão**	**No palelão**	**No embalão**
7.1. Não disponho de tempo para separar, armazenar e colocar os lixos recicláveis nos locais apropriados			
7.2. Não disponho de informação sobre como e quais os resíduos que devo separar			
7.3. Não sei quais os lixos que devo separar			
7.4. Tenho dificuldade física em deslocar-me ao local de recolha			
7.5. O local de depósito/recolha dos lixos separados encontra-se longe da minha casa			
7.6. Não sei para onde levar os materiais separados			
7.7. Não existem equipamentos em número suficiente na minha área			
7.8. O local de depósito/recolha dos lixos separados não é asseado e tem mau cheiro			
7.9. O local de depósito/recolha dos lixos separados encontra-se sempre cheio			
7.10. O local de depósito/recolha dos lixos separados encontra-se muito degradado			
7.11. O local de depósito dos lixos separados não é seguro para eu me deslocar lá			
7.12. Não me pagam para o fazer			
7.13. Esqueço-me de separar os lixos			
7.14. Não produzo lixo em quantidades suficientes que justifiquem a sua separação			
7.15. Nunca pensei nisso			
7.16. Não quero saber desse assunto			
7.17. Não faz qualquer diferença eu separar os lixos ou não			
7.18. Não disponho espaço na minha cozinha (ou noutro local da minha habitação) para separar o lixo			
7.19. Manter em casa os lixos é anti-higiénico			
7.20. Ninguém que eu conheço separa os lixos			
7.21. Os resíduos podem ser encaminhados para reciclagem através da recolha tradicional			
7.22. Não me sinto capaz para efectuar a separação e colocação dos materiais no local de recolha			
7.23. Não há possibilidade de reclamar e, se há, as reclamações não são levadas em conta			

8. Tem intenção de no futuro separar os lixos do seu agregado familiar e colocá-los no:
   8.1. Vidrão: Sim o Não o Não sei o
   8.2. Papelão: Sim o Não o Não sei o
   8.3. Ecoponto: Sim o Não o Não sei o

IV– Incentivos que Levem a População a Separar os Lixos Domésticos

9. Indique qual o nível de importância que atribui a cada uma das propostas abaixo indicadas, no sentido destas **poderem levar** quem não o faz, a separar e colocar os lixos domésticos para reciclagem no local de recolha. Utilize a seguinte escala de respostas:

nada importante=1 **pouco importante=2** **importante=3** **muito importante=4**

9.1. Ter o apoio de amigos e vizinhos..... ____
9.2. Saber da participação de amigos e vizinhos..... ____
9.3. Ter o apoio da família na separação dos lixos domésticos..... ____
9.4. Dispor de maior informação específica de como, quando fazer e que materiais são aceites ..... ____
9.5. Dispor de informação sobre todo o processo de separação, recolha, triagem e reciclagem ..... ____
9.6. Dispor de informação sobre os resultados da adesão da população do meu concelho e do país à recolha selectiva..... ____
9.7. Sancionar aqueles que não separam os seus lixos domésticos ..... ____
9.8. Receber um prémio com valor monetário por separar e colocar no local recolha os resíduos domésticos recicláveis..... __
9.9. Saber que personalidades de elevada notoriedade pública separam os lixos domésticos..... __
9.10. Dispor de um método de recolha porta-a-porta para os resíduos recicláveis..... __
9.11. Dispor de um ecoponto perto de casa..... __
9.12. Manter os ecopontos limpos ..... __
9.13. Colocar os ecopontos em lugar agradável e seguro..... __
9.14. Despejar os ecopontos com a devida regularidade..... __

10. A partir de que distância deixaria de participar na colocação selectiva de lixos num depósito localizado (ex. ecopontos)?

5 metros o 35 metros o 100 metros o 300 metros o 400 metros o 800 metros o 1600 metros o

11. Constata-se que por vezes existe contaminação do contentor/ específico, ou seja são lá colocados lixos que não deviam lá estar (não fazem parte da lista de resíduos aceites). Pensa que esses **erros** são devidos a:

11.1. Engano	Sim o	Não o	Não sei o
11.2. Complexidade do programa	Sim o	Não o	Não sei o
11.3. Falta de informação	Sim o	Não o	Não sei o
11.4. Falta de tempo	Sim o	Não o	Não sei o
11.5. Desleixo / falta de cuidado	Sim o	Não o	Não sei o

12. Assinale os meios através dos quais recebeu informação sobre a recolha selectiva e indique a importância que atribui a cada meio e qual o grau de satisfação com a mensagem recebida. Utilize as escalas anteriores de 1 a 4 para a importância e para a satisfação, sendo 1 o valor mínimo e 4 o valor máximo.

Recebeu informação através de:	**12.1. Já recebeu?**	**12.2. Que importância atribui a cada meio?**	**12.3. Qual o grau de satisfação com a mensagem recebida?**	**12.4. Gostaria de (continuar a) receber?**
a) *Mailing* na caixa do correio	Sim o Não o			Sim o Não o
b) Guias/brochuras/calendários de recolhas	Sim o Não o			Sim o Não o
c) Revistas / semanários	Sim o Não o			Sim o Não o
d) Placardes exteriores *(outdoors)*	Sim o Não o			Sim o Não o
e) Sacos azuis/outro tipo de cestos	Sim o Não o			Sim o Não o
f) Jornais municipais ou regionais	Sim o Não o			Sim o Não o
g) Jornais diários nacionais	Sim o Não o			Sim o Não o
h) Rádio	Sim o Não o			Sim o Não o
i) Televisão	Sim o Não o			Sim o Não o
j) Placardes colocados nos ecopontos	Sim o Não o			Sim o Não o
k) Outras, quais: _____	Sim o Não o			Sim o Não o

13. Tendo em conta a separação e colocação dos lixos a reciclar no local especificado, considera o seu agregado familiar:

13.1. **Aderente** a este comportamento:	Totalmente o	Parcialmente o	Nada o
13.2. **Competente** para efectuar estas tarefas:	Totalmente o	Parcialmente o	Nada o
13.3. **Motivado** na separação doméstica dos resíduos:	Totalmente o	Parcialmente o	Nada o

14. Até que ponto se identifica com os seguintes grupos / líderes. Utilize a seguinte escala de respostas:

Não pertenço=1 Pertenço mas não tem importância para mim=2 Pertenço e é importante para mim=3 Pertenço e é muito importante para mim=4

a) Jovens..... ____
b) Idosos..... ____
c) Mulheres..... ____
d) Família..... ____
e) Região (por ex. Norte, Sul, Centro, Litoral/Interior).. ____
f) Profissão / Ocupação..... ____
g) Ambientalistas / Ecologistas..... ____
h) Europeus..... ____
i) Portugueses..... ____
j) Clube desportivo / recreativo..... ____
k) Religioso..... ____
l) Político..... ____
m) Artístico..... ____
n) Empresários..... ____
o) Sindicatos..... ____
p) Escolas que frequentou..... ____

V– Compra de Produtos com Materiais Recicláveis

15. Seguidamente são apresentados um conjunto de atributos referentes a produtos de grande consumo adquiridos no dia-a-dia; indique o grau de importância que estes atributos têm na sua **decisão de compra**. Utilize a seguinte escala de respostas:

nada importante=1
pouco importante=2
importante=3
muito importante=4

15.1. Biodegradáveis..... ____
15.2. Produzidos por processos amigos do ambiente..... ____
15.3. Produzidos com materiais recicláveis..... ____
15.4. Não tóxicos/perigosos..... ____
15.5. Produzidos por empresas que apoiam a protecção do ambiente ____
15.6. Produzidos sem pesticidas..... ____
15.7. Não testados em animais..... ____
15.8. Produzidos com materiais que não provêm de animais..... ____
15.9. Não geneticamente manipulados..... ____

16. No respeitante às **embalagens** de produtos, indique o seu nível de concordância face às afirmações seguintes. Utilize a seguinte escala de respostas:

discordo totalmente=1
discordo=2
concordo=3
concordo plenamente=4

16.1. Deve utilizar-se o mínimo de embalagens..... ____
16.2. As embalagens são indispensáveis..... ____
16.3. Aprecio a estética e facilidade de uso de uma embalagem... ____
16.4. Não ligo à quantidade de embalagens de um produto..... ____
16.5. Evito comprar um produto com várias embalagens..... ____
16.6. Aprecio a informação contida nas embalagens..... ____
16.7. Prefiro produtos com embalagens recicláveis ou reutilizáveis ____
16.8. As embalagens deviam conter informação sobre como separar e onde colocar os resíduos..... ____

17. Que cor associa a cada uma das seguintes famílias de materiais, nos equipamentos localizados de depósito de lixos a reciclar?

Famílias de materiais	Cor
Vidro	
Papel/Cartão	
Metal	
Plástico	

18. Conhece o símbolo **PONTO VERDE ?**

Sim o

Não o

18.1. Das afirmações seguintes qual é a que corresponde à definição de **PONTO VERDE** (escolha apenas **uma** das 5 frases)

a. As embalagens com esse símbolo são devolvidas ao produtor para reutilização o
b. As embalagens com esse símbolo contêm matérias recicláveis o
c. As empresas que comercializam produtos com esse símbolo contribuem financeiramente para um programa integrado selectivo de recolha de embalagens para posterior reciclagem o
d. As embalagens com esse símbolo são recicláveis o
e. As embalagens com esse símbolo podem ser recolhidas separadamente o

VI. Características do Respondente e do Agregado Familiar

Gostaríamos de ter alguma informação sobre as suas características sociodemográficas e do seu agregado familiar:

1. Em que tipo de habitação reside o seu agregado familiar? Própria o Arrendada o Familiar o
   a. Vivenda o
   b. Quinta o
   c. Apartamento o
      1.1. Rés-do-chão o Andar superior o 1.2. Tipologia: TO o T1 o T2 o T3 o T4 o T5 ou maior o
      1.3. Existe administração do condomínio? Sim o Não o
      1.4. A gestão do condomínio é razoavelmente eficaz? Sim o Não o
      1.5. Existe um espaço que possa ser utilizado para colocar temporariamente os resíduos que separou antes de os colocar no local de recolha?
         1.5.1. No Apartamento Sim o Não o
         1.5.2. No Edifício Sim o Não o

2. No seu prédio existe: a. Casa / Local para o lixo? Sim o Não o
   b. Conduta para o lixo? Sim o Não o
   c. Alguém responsável pela colocação do lixo na rua? Sim o Não o

3. Quantos sacos de lixo são produzidos, em média, por dia, no seu agregado familiar? _____

4. Na sua habitação existe? a. Rádio o b. Televisão o c. Computador o d. Internet o e. Carro o f. Telemóvel o

5. Quantas horas por dia dedica, em média: a. A ver televisão _____ b. A ouvir rádio _____ c. A ler jornais _____

6. Tem por hábito ler a informação / publicidade que é colocada na sua caixa do correio? Sim o Não o

7. O respondente é o responsável pelo agregado familiar (para efeitos fiscais)? Sim o Não o

8. Qual o seu grau de escolaridade?

a. Básico/1º ciclo (antiga primária)	o
b. Básico/2º ciclo (antigo 2º ano liceu)	o
c. Básico/3º ciclo (antigo 5º ano liceu)	o
d. Secundário (antigo 7º ano liceu)	o
e. Técnico-profissional (equiv. 3º ciclo)	o
f. Técnico-profissional (equiv. Secundário)	o
g. Superior não universitário	o
h. Superior universitário	o

8.1. Qual o grau de escolaridade do responsável pelo agregado?

a. Básico/1º ciclo (antiga primária)	o
b. Básico/2º ciclo (antigo 2º ano liceu)	o
c. Básico/3º ciclo (antigo 5º ano liceu)	o
d. Secundário (antigo 7º ano liceu)	o
e. Técnico-profissional (equiv. 3º ciclo)	o
f. Técnico-profissional (equiv. Secundário)	o
g. Superior não universitário	o
h. Superior universitário	o

9. Qual a sua nacionalidade?
   Portuguesa o
   Outra o Qual? _____

8.2. Qual o seu grau de parentesco com o chefe de família? _____

10. É emigrante? Sim o Não o

11. Qual a sua origem étnica? Europeia o Africana o Asiatica o Latino-Americana o Cigana o

12. Indique a composição do seu agregado familiar explicitando o grau de parentesco de cada pessoa consigo, os respectivos estado civil (Casado ou em União de facto, Solteiro, Divorciado, Separado ou Viúvo), idades e sexo (Feminino (F) ou Masculino (M)).

Membros do agregado familiar	Profissão	Estado civil	Idade	Sexo
Respondente				
Conjuge				
Pai				
Mãe				
Filhos				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Outros.Quais?_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

13. No seu agregado familiar quem é responsável por:

	O respondente	O conjuge	Ambos	Outras pessoas. Quem?
a. Obter a maioria do rendimento?	o	o	o	o _____
b. Pelas tarefas de casa?	o	o	o	o _____
c. Pelas compras para a casa?	o	o	o	o _____
d. Por fazer a maioria das refeições?	o	o	o	o _____
e. Por colocar os lixos domésticos na rua?	o	o	o	o _____
f. Por separar os lixos domésticos?	o	o	o	o _____
g. Por colocar os lixos separados no local de recolha?	o	o	o	o _____

14. Qual o rendimento mensal líquido do seu agregado familiar (em contos)?

Menos de 64 o 64 a 99 o 100 a 199 o 200 a 399 o 400 a 599 o 600 ou mais o

16. Comentários ou sugestões adicionais sobre o assunto deste inquérito:

_____

_____

_____

_____

Muito obrigado pela sua colaboração

Entrevistador: _____ **Data:** __ /__ / 2000 **Hora:** __ h __ m

Contacto telefónico: _____

Observações: _____

_____

_____

_____

_____

_____

_____

Annex B

SAMPLE STRUCTURE

TABLE B.1
Sample structure

Municipal system	Municipalities	Predicted sample	Final sample
VALORMINHO	Caminha	25	25
	Paredes de Coura	15	15
RESULIMA	Barcelos	66	67
	Ponte da Barca	20	20
BRAVAL	Braga	41	41
	Vieira do Minho	10	10
LIPOR	Maia	55	55
	Porto	130	130
	Valongo	43	43
SULDOURO	Santa Maria da Feira	33	33
	Vila Nova de Gaia	67	67
TERRA QUENTE TRANSMONTANA	Alfandega da Fé	10	10
	Mirandela	20	20
VALORLIS	Marinha Grande	38	38
	Pombal	40	40
ERSUC	Aveiro	80	80
	Estarreja	32	32
	Mealhada	30	30
	Oliveira de Azeméis	80	80
	Vagos	30	30
PLANALTO BEIRÃO	Mangualde	30	30
	Viseu	70	70
COVA DA BEIRA E	Guarda	40	40
ECORRAIA	Penamacor	20	20
AMARTEJO	Abrantes	20	20
	Sardoal	10	10
OEIRAS	Oeiras	50	55
ARMASUL	Almada	110	114
	Palmela	30	32
SETÚBAL	Setúbal	30	32
ALENTEJO CANTRAL	Cuba	18	18
	Vidigueira	22	22

Source: GIESTA (2000).

TABLE B.1 (Cont.)
Sample structure

Municipal system	Municipalities	Predicted sample	Final sample
PORTALEGRE	Castelo de Vide	10	10
	Portalegre	20	26
ALGAR	Lagos	25	25
	Olhão	40	40
	Tavira	30	30
ÉVORA	Évora	30	30
BEJA	Beja	30	30
VALORPOLIS	Amadora	40	46
	Lisboa	160	190
	Loures (Portela)	40	46
PAREDES	Paredes	30	30
TORRES VEDRAS	Torres Vedras	30	30
SANTIAGO DO CACÉM	Santiago do Cacém	30	30
RESITEJO	Constância	15	14
	Sntarém	35	36
CASCAIS E SINTRA	Cascais	30	44
	Sintra	60	77
LOUSADA	Lousada	30	30

Source: GIESTA (2000).