



Determinants of household recycling intention: The acceptance of public policy moderated by habits, social influence, and perceived time risk

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ABSTRACT

This research proposes a causal model that studies the influence of both political (trust in government and concern about the policy designed) and psychological factors (social influence and perceived risks) on the intention to recycle. It also addresses the moderating role of habits in the processes of acceptance of public recycling policies. To evaluate a new public policy for urban waste management in Córdoba city (Argentina) a structural equation model with 350 individuals was developed. Thus, it is confirmed that trust reduces uncertainty and favours the acceptance of a public policy, especially to those individuals who do not have recycling habits and do not understand the benefits of new regulations. Besides, individuals concerned with the design of a public policy tend to accept them, denoting the relevance of environmental awareness in the implementation of recycling actions. Finally, political factors, social pressure and perceived risks are relevant psychological antecedents that explain the intention to recycle.

1. Introduction

Governments must design public policies to mitigate environmental damage and make transformative and systematic changes (United Nations, 2021). Thus, they develop regulations that restrict individual behaviour and that require the involvement of citizens for their compliance (Kim et al., 2013). Therefore, it is relevant to understand the variables that influence citizens' acceptance of policies since the expected results depend on their active participation (Kyselá et al., 2019). In this framework, there is no consensus on what the acceptance of a policy implies and on what the indicators for its measurement are (Kim and Shim, 2020).

In particular, public policies for the management of urban solid waste (USW) aim to preserve natural resources through three activities: reduction, reuse, and recycling of waste. USW is based on the active participation of citizens in household waste separation at the expense of their time and education. In this context, the recycling regulations proposed by governments frequently call for voluntary contributions without monetary compensation. Previous research about the citizen's intentions to recycle has proposed models based on the theory of planned behaviour, focusing on the study of the benefits and costs of recycling at individual level without considering situational or political factors (Keramitsoglou and Tsagarakis, 2013; Onel and Mukherjee,

2017). Therefore, Wan et al. (2018) have proposed a model that classifies the explanatory variables of environmental behaviour according to two different factors: 1) political factors: these variables study the relationship of citizens with their government and their subjective evaluation of the enforcement of public policy; and 2) psychological factors: which include the attitude to the environment, the perceived benefit of their behaviour and social influences. However, the model proposed by the authors does not focus on the casual chain of factors nor does it analyse their moderation effect.

Moreover, proposing an empirical model that includes all the possible variables to study intentions to recycle might not be useful (Kollmuss and Agyeman, 2002). In this regard, it has been observed that the variables with the greatest explanatory power for recycling intention are social influence and time costs (Farrow et al., 2017; Loan et al., 2017). In addition, previous studies have suggested that political aspects such as trust in the government and the quality of proposed regulations influence the acceptance of USW and promote intentions to recycle (Siegrist, 2021). Also, it is necessary to understand the scope of political factors depending on the environmental behaviour of citizens since there is evidence that individuals' habits moderate the impact of trust in governments on the acceptance of a policy (Chiu et al., 2012). In particular, the role of habits as moderating variable is important, but the evidence is not conclusive (Fan et al., 2019).

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The objective of this study is to confirm the causal chain of political and psychological factors on citizens' intentions to recycle; we want to understand how the acceptance of a public policy is built and its role as an antecedent of the intention to recycle. Therefore, we propose a model of structural equations to study how recycling intentions develop, considering individual costs, social pressures and the acceptance of a recycling policy determined by trust in governments and their regulations. To this end, citizens' opinion on a recycling policy launched in 2018 in Córdoba city (Argentina) was evaluated, which involved an intensive communication program (Municipality of Córdoba, 2021). For the first time, the city designed a policy that integrated education campaigns on how to separate waste and where to dispose of it and the government purchased collection vehicles and established routes for the removal of recycled waste. Thus, this work contributes to the study of environmental policies and pro-environmental behaviour in emerging countries, a geographical area with a remarkable lack of studies on the subject (Farrow et al., 2017).

The remainder of this paper is organised as follows. Section 2 presents the theoretical framework and the justification for the conceptual development of this study. Section 3 describes the research methodology. Descriptive findings are reported in Section 4, and Section 5, includes conclusions and implications on how to promote recycling intentions and the design of public policies.

2. Theoretical framework

2.1. Environmental behaviour and political and psychological factors

Pro-environmental behaviours imply actions to benefit the environment or mitigate damage (Steg and Vlek (2009)). Following Wan et al. (2015) and Kollmuss and Agyeman (2002), these behaviours can be classified into 1) direct behaviours, which refer to the execution of pro-environmental actions (e.g. recycling) and, 2) indirect behaviours, considered as non-activist behaviours that indirectly influence the environment (e.g. accepting a public policy). These pro-environmental behaviours are influenced by two dimensions known as political and psychological factors (Wan et al., 2018). Political factors are forces derived from the institutional context that influences the acceptance of a public policy. In the context of recycling, trust on the government and the quality of the proposed norm impact on the citizen's policy acceptance (Muhammad et al., 2021). Moreover, psychological factors are related to the cognitive processes of an individual. Specifically, when the recycling policy does not offer economic rewards, the evaluation of the individual costs of recycling and social influence are relevant variables that directly influence the intention to recycle (Farrow et al., 2017; Loan et al., 2017; Halvorsen, 2008). Since public policies impose on citizens a behaviour that they must implement, the acceptance of these policies facilitates citizen decision-making and promotes their intention to recycle (Wang and Hao, 2020).

2.1.1. Trust and acceptance of public policies

Citizen's trust in a government is the belief that it will be able to achieve its objectives because it is perceived as competent and with values and intentions aligned with those of its citizens (Greenberg, 2014). High levels of trust in the government allow citizens to reduce the complexity and uncertainty in making their individual decisions, which facilitates the implementation and legitimation of public policies (Zanakis et al., 2015). Hence, trust is an underlying attitude of citizens towards public policy, which can be expressed in open (e.g., respecting a legal norm or defending an environmental cause) or hidden (e.g., expressing an opinion) behaviour. However, the acceptance of a public policy implies that citizens are willing to commit to regulations and to modify their behaviours based on what governments establish (Stern, 2000). Thus, trust is a heuristic decision that allows to accept or reject a public policy when the cognitive evaluation is complex (Rodríguez-Sánchez et al., 2018). So, there is evidence on the direct and causal

relationship between trust and the acceptance of environmental public policies (Kitt et al., 2021; Mukai et al., 2020). Therefore, it is possible to hypothesise that:

H_1 : Political trust directly and positively influences the acceptance of public USW policies.

2.1.2. Recycling habits and acceptance of public policies

The management of USW policies represents a challenge to governments as it requires a change in their citizens' habits. Habits are memory-based tendencies to automatically respond to specific signals that are acquired through the repetition of behaviours in stable contexts (Verplanken and Whitmarsh, 2021). Thus, when a person has acquired a habit, his/her behaviour becomes routine, lacking in planning and with limited conscious effort (Lavelle et al., 2015). Previous studies have examined the moderating role of habits since they affect behavioural intentions when there is a certain level of automation (Jorgensen et al., 2013; Steg and Vlek, 2009).

Indeed, Chiu et al. (2012) observed that when a new behaviour becomes a habit, that is, automatic and familiar, it is because there is no longer any uncertainty regarding the decision whether to recycle or not and, therefore, the effect of whether to trust or not on the acceptance of policies diminishes. In this context, people who have recycling habits will sustain their behaviour over time (Geiger et al., 2019). It is expected that they support initiatives that are familiar to them, having less impact on the trust placed in the government as a predictor variable of policy acceptance. Fan et al. (2019) focused on the moderating effects of habits in the relationship between behavioural intention and waste sorting behaviour, but the moderating effect was not significant due to the influence of local conditions and the waste management system. Geiger et al. (2019) concluded in their meta-analysis that future research is needed to explore why previous recycling affects current recycling, and Tseng et al. (2018) calls to explore the role of habit in the context of recycling behaviour. Consequently, it is proposed that:

H_{1b} : Recycling habits negatively moderate the impact of trust in the acceptance of USW public policies.

2.2. Concern about the reliability of the waste separation policy and its impact on acceptance

In developing countries, citizens do not collaborate with the recycling process when they perceive that their classified waste at home is then mixed during transport or in subsequent treatment (Loan et al., 2017). When citizens perceive that their effort does not generate benefits, the effectiveness of the USW policy is undermined since its success is based on the sum of individual behaviours (Harring et al., 2019). Besides, there is resistance in the implementation of a public policy when there is uncertainty about the operation of the actions prescribed by the government (Steg and Vlek, 2009). However, when the competent authority provides the necessary infrastructure, it facilitates cooperation (Mansbridge, 2014) as citizens perceive that public policy is correctly designed, is efficient and brings benefits (Loan et al., 2017).

In this context, insofar as citizens are involved in understanding the benefits and operation of a USW policy, they express a degree of concern about policies that develop their cognitions (Sarabia-Sanchez et al., 2021). Thereby, when citizens worry about the reliability of a recycling system, they show their environmental awareness and are predisposed to accept USW policies (Lee and Paik, 2011). Thus, concern is a cognitive state that is positively associated with preference for altruistic policies with a long-term focus (Escario et al., 2022). Therefore, it is feasible to hypothesize that:

H_2 : Concern about the reliability of a USW policy directly and positively influences acceptance of public policy.

2.3. Acceptance of public policies and their impact on the intention to recycle

Acceptance implies that citizens have positive attitudes towards new procedures, laws or taxes, all of which make the policy and the effectiveness of its implementation viable (Wan et al., 2015). The acceptance of a public policy is a non-activist behaviour that indirectly influences the environment (Wan et al., 2015). Thus, the acceptance implies that the citizen is willing to participate (Detoc et al., 2020), positively evaluating the changes in the public context (Rodríguez-Sánchez et al., 2018). In this sense, it is relevant to distinguish public policy acceptance, defined as an attitude, from public support. Public support represents the intention to take actions related to such policies (Jansson and Rezvani, 2019). Thus, acceptance of a public policy can be conceptualised as an antecedent of public support.

Therefore, there is a direct relationship between policy acceptance and the intention to behave in a sustainable manner, which has been observed in the purchase of sustainable products (e.g., the adoption of solar thermal tanks and alternative fuel vehicles studied by Chen et al., 2016) and also in frequent behaviours that do not entail economic costs (e.g., product recycling, studied by Wang and Hao, 2020). Therefore, it is possible to hypothesize that:

H₃: Acceptance of the USW public policy directly and positively influences intention to recycle.

2.4. Social influence and its impact on the intention to recycle

Social influence is defined as a change in an individual's attitudes or behaviours that results from interaction with another individual or a group. Also, Korir and Kipkemboi (2014) define social influence as the pressure exerted by a group to encourage a person to change his/her attitudes to conform to the group's norms. Thus, social influence implies persuading or urging others to do something or to keep from doing something else and it involves changing one's behaviour to meet social approval (Farrow et al., 2017). In this research, it suggests that individuals are permeable to family, neighbours and friends' advice about waste recycling (Labib et al., 2021), which predisposes them to act in a prosocial way (Xu et al., 2018).

The individual experiences a psychological pressure that arises from comparing his/her behaviour with that of others, which prompts them to change their behaviour (Kirakozian, 2016; Ling et al., 2021). However, it was observed that social pressure has no effect on policy acceptance but it has an impact on the intention to recycle. Social influence regulates behaviour but does not modify individual cognitions and preferences. Therefore, social influence has no impact on the acceptance of public policies (Blose et al., 2020; Wan et al., 2018). Therefore, it is hypothesized that:

H₄: Social influence directly and positively influences intention to recycle.

2.5. Individual time risks as antecedents of intention

Risk perception is defined as the process of interpreting signals and forming a subjective judgement about the probable damage that uncertain events could cause (Bradley et al., 2020). Perceived risks are unique to each person based on their values, education, experiences, and interests (Robinson et al., 2012). Perceived risk is a construct with multiple dimensions (social, financial, psychological, performance, physical and temporal) that vary in preponderance according to the phenomenon under study (Sarabia-Sanchez and Rodriguez-Sanchez, 2016). Specifically, time risks affect household waste separation because it requires that citizens carry out a set of frequent practices (Chai et al., 2015).

Furthermore, if the recycling activity is a voluntary behaviour without economic incentives, it can be perceived as an action that takes up free time and has an opportunity cost (Halvorsen, 2008). This

perception could explain the gap between the intention to care for the environment and actual behaviour because if environmental behaviour (e.g., recycling) requires a lot of time and effort, it probably will not be adopted. In fact, Pedersen and Manhice (2020) observed that the key barriers to recycling are the perceived effort and additional time required, and confirmed that although citizens expressed good intentions to separate waste, most just separated less than they could to avoid the extra effort. In conjunction, the evidence shows the time risk is a relevant variable that has a direct effect on the intention to recycle (Rathore and Sarmah, 2021), so it is logical to propose that:

H₅: Perceived time risks directly and negatively influence intention to recycle.

3. Methodology

3.1. Procedure and participants

A questionnaire with the research interest scales was designed for the first phase of the work. The information collection system used was through a PAPI (paper and pencil interview) as some questions required the interviewer's intervention. An effective sample of 350 individuals was obtained, for which interviewers were assigned to eight government offices of Córdoba city which bring together neighbourhoods with different socioeconomic status. Therefore, socioeconomic status quotas were imposed (ABC1 = 6%, C2 = 18%, C3 = 31% and D1D2 = 46%) according to a report of the Argentine Society of Marketing and Opinion Researchers (SAIMO, 2012): age (with year intervals of 18–35, 36–45, 46–55, 56–65 and over 65) and sex (men and women), respecting the proportions of the last population census (INDEC, 2010).

3.2. Measurements

The scales used (see Appendix), which had been validated in previous studies, were adapted to the Spanish language of Argentina. 7-point Likert-type scales were used, in which 1 = "totally disagree", 7 = "totally agree", and 4 = "neither disagree nor agree".

Intention to recycle. The scale used by Ramayah et al. (2012) in their study on urban recycling was chosen.

Acceptance of public policies. The scale used by Rodríguez-Sánchez et al. (2018) was adopted. Yet, the items were adapted to analyse the evaluation of urban recycling policies.

Trust in government. The Poortinga and Pidgeon's (2006) scale was used to measure people's willingness to trust those responsible for designing recycling policies.

Concern about the reliability of the recycling policy. The three-item scale from Loan et al. (2017) was adapted to measure concern about USW policy, guiding the writing to evaluate citizens' level of interest in its operation, benefits and reliability.

Social Influence. It was taken from the work of Sinnappan and Rahman (2011) to measure an individual's peer influence on decision making regarding recycling.

Perceived time risk. The Featherman and Pavlou (2003) scale was adapted to evaluate the opinion about the time it takes an individual to learn and carry out home recycling tasks.

Recycling Habits. To carry out a moderation analysis, the individuals were classified into two groups according to their answer to the question: "Do you separate waste (paper-plastic-glass-organic) at home?" This question had a frequency score of 1–5, in which 1 was "I never recycle" and 5 was "I always recycle." Consequently, a group with higher recycling habits (individuals with scores of 4 and 5), and another without recycling habits (subjects with scores 1, 2 and 3) were formed. Through Student's *t* tests, it was shown that the conformed groups have a significant mean difference.

4. Results

The analyses were carried out using the two-step method proposed by Anderson and Gerbing (1988), which first involves a confirmatory factor analysis to validate the measurement model (reliability and validity) and later an analysis of structural equations to verify the raised hypotheses. Reliability problems were not detected since all Cronbach's alphas and composite reliability indices of the factors are higher than the recommended value of 0.7. Besides, all the extracted variances are greater than 0.50 (Fornell and Larcker, 1981). Then, to guarantee convergent validity, we eliminated the items with factor loadings lower than 0.70 (Bagozzi and Yi, 1988), being these: CG4, CG5, PA2, PA3, SI3 and RT4. This strategy does not produce significant decreases in content validity due to the elimination of the low percentages of indicators (Bell and Lumsden, 1980) (see Table 1).

Discriminant validity problems were not identified since (see Table 2): a) the heterotrait-monotrait ratio is less than 0.9 for each pair of factors (Henseler et al., 2016) and b) the average variance extracted for each factor is always higher than the square of the correlation between each pair of factors (Fornell and Larcker, 1981).

The estimation method used has been the robust maximum

Table 1
Psychometric properties of the measurement model: reliability and convergent validity.

Construct	Item	λ (t-value)	Reliability		
			α	CR	AVE
Trust in government	CG1	0.791 (17.026) **	0.826	0.828	0.618
	CG2	0.837 (18.977) **			
	CG3	0.723 (14.317) **			
Concern about the reliability of the Policy	CON1	0.898 (20.156) **	0.904	0.904	0.759
	CON2	0.852 (17.475) **			
	CON3	0.863 (18.976) **			
Policy acceptance	PA1	0.688 (7.549) **	0.850	0.855	0.665
	PA4	0.821 (9.147) **			
	PA5	0.944 (9.712) **			
Social influence	SI1	0.925 (28.189) **	0.874	0.883	0.719
	SI2	0.905 (25.578) **			
	SI4	0.693 (15.255) **			
Risk of time	RT1	0.867 (18.774) **	0.890	0.892	0.736
	RT2	0.879 (24.197) **			
	RT3	0.822 (16.182) **			
Intention to recycle	IR1	0.838 (13.569) **	0.860	0.860	0.673
	IR2	0.744 (12.089) **			
	IR3	0.889 (13.548) **			
Robust Adjustment Goodness Measures					
S-B χ^2 (120df) = 169.51 (p = 0.002)		SRMR	TLI	CFI	RMSEA (90% CI)
		0.05	0.975	0.981	0.041 (0.025 0.054)

Notes: λ = Standardized factor loading, α = Cronbach's α , CR = Composite Reliability, AVE = Average variance extracted, S-B $\chi^2 = \chi^2$ Satorra-Bentler, df = degrees of freedom, SRMR = Standardized Root Mean Residual TLI = Tucker-Lewis Index, CFI = Comparative Fit Index, RMSEA = Root Mean-Square Error of Approximation, CI = Confidence Interval, * ** = <0.05.

likelihood (RML), which is adequate to overcome the problems of non-normality of the data as the calculated Mardia coefficient is 64.34. RML uses Satorra-Bentler scaled χ^2 statistic (S-B χ^2) to improve the reliability of the standard errors and of the statistic in the absence of normality (Aldás and Uriel, 2017). However, it is a statistic that is sensitive to sample size and deviations from multivariate normality, so it tends to be significant (Bentler and Bonett, 1980). Thus, we justify the good fit of the model by calculating the quotient between the S-B χ^2 and its degrees of freedom, which assumes a value lower than 5 (Wheaton et al., 1977). Besides, considering that such quotient has the same limitations of χ^2 , we completed the evaluation of the fit with indicators of goodness of fit (Hair et al., 2009). Therefore, the fit of the measurement model is good (see Table 2). Finally, we tested the hypotheses using a covariance structure model whose resulting fit is good (see Table 3). For the contrasts of invariance form, load factor and factor variance (for the proposed moderation hypothesis) we used the multigroup analysis technique following the methodological guidelines of Aldás (2013).

4.1. Hypothesis testing

Analyses confirm that both trust in the government ($\beta_1 = 0.169$; p > 0.05; Cohen's d = 0.093; acceptance of H_1) and concern about the reliability of public policy ($\beta_2 = 0.214$; p > 0.01; Cohen's d = 0.118; acceptance of H_2) influence the acceptance of public policies. Besides, both the acceptance of public policies ($\beta_3 = 0.299$; p < 0.01; Cohen's d = 0.263; acceptance of H_3) and social influence ($\beta_4 = 0.220$; p < 0.01; Cohen's d = 0.253; acceptance of H_4) positively influence citizens' intention to recycle. Furthermore, time risk negatively influences recycling intentions ($\beta_5 = -0.320$; p < 0.01; Cohen's d = -0.324; acceptance of H_5).

Table 4 shows the results of the multi-group analysis that includes the estimation of the structural relationships for each group and their corresponding goodness-of-fit measures exceeding the critical acceptance values, and thus presenting a good fit. According to the analysis of the Lagrange test on the significance of the S-B χ^2 difference, recycling habits are significantly different between groups. When considering H_{1b} , recycling habits modify the strength of the structural relationship between trust in the government and acceptance of public policies, constituting a moderating variable.

Trust in the government does not significantly influence the acceptance of public policies ($\beta_{1b1} = -0.0051$; t = 0.588, Cohen's d = 0.04) when a person has recycling habits. On the contrary, in those people who do not have recycling habits, trust in the government is an antecedent that significantly influences acceptance ($\beta_{1b2} = 0.265$; t = 2.622; Cohen's d = 0.19).

A summary of the results of the present work is shown in Fig. 1.

5. Discussion

The results confirm that trust in the government positively influences the acceptance of public recycling policies (H_1). Therefore, we verified the direct effect between trust and policy acceptance proposed by Rodriguez-Sanchez et al., (2018). This finding is consistent with the literature regarding environmental policies in general as well as recycling policies in particular (Wan et al., 2017), observing its role as a facilitator of citizen cooperation (Loan et al., 2017). People accept voluntary efforts to recycle if they perceive the government as an entity capable of managing USW policies. On the other hand, many citizens have limited knowledge about recycling so they doubt the efficiency of their decisions. Hence, trust reduces the uncertainty about the environmental problem that this public policy seeks to mitigate (Wan et al., 2018; Mukai et al., 2020).

However, results show that the impact of trust in the acceptance of public policies is direct and positive in citizens who do not have built-in recycling habits and habits negatively moderate the impact of trust on the acceptance of public policies (acceptance of H_{1b}). Indeed, people

Table 2
Psychometric properties of the measurement model: discriminant validity.

Construct	Risk of time	Concern	Social influence	Trust in government	Policy acceptance	Intention to recycle
Risk of time	0.736	0.003	0.052	0.012	0.107	0.201
Concern about the reliability of the Policy	0.065	0.759	0.000	0.003	0.039	0.071
Social influence	0.286	0.055	0.719	0.041	0.040	0.116
Trust in government	0.114	0.070	0.208	0.618	0.021	0.036
Policy acceptance	0.369	0.226	0.231	0.157	0.665	0.174
Intention to recycle	0.450	0.264	0.391	0.193	0.422	0.673

Notes. Values of the Average Variance Index (AVE) in main diagonal. Lower triangular matrix: Heterotrait-Monotrait Ratio of Correlations. Upper triangular matrix: correlations between the factors.

Table 3
Structural equation model results.

Hypothesis	Structural relationship	Std. coefficient	t-Value	Contrast
H ₁	Trust in government → Policy acceptance	0.169	2.248 **	Accepted
H ₂	Concern about the reliability of the Policy → Policy acceptance	0.214	2.766 ***	Accepted
H ₃	Policy acceptance → Intention to recycle	0.299	4.163 ***	Accepted
H ₄	Social influence → Intention to recycle	0.220	3.957 ***	Accepted
H ₅	Risk of time → Intention to recycle	-0.320	-5.072 ***	Accepted
Robust Adjustment Goodness Measures				
S-B χ^2 (124df) = 205.45	SRMR	TLI	CFI	RMSEA (90% CI)
(p = 0.000)	0.088	0.961	0.968	0.043 (0.039 0.063)

Notes. * = p < 0.1; **p = <0.05; *** = p < 0.01, S-B χ^2 = χ^2 Satorra-Bentler, df = degrees of freedom, SRMR= Standardized Root Mean Residual, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index, RMSEA = Root Mean-Square Error of Approximation, CI = Confidence Interval.

Table 4
Moderating effect of Recycling Habits.

Hypothesis	Structural Relationship	General Model [†]		Multigroup Model [‡]				Lagrange's Test			Contrast
		β	t-value	With recycling habit		Without recycling habit		Diff. χ^2 (accumulated)	df	p-Value	
				β	t-value	β	t-value				
H1 _B	<i>Recycling habits negatively moderate the impact of trust in the acceptance of USW public policies</i>	0.169	2.248	0.051	0.588 ^{NS}	0.265	2.622 ***	6.060	1	0.014	Accepted

† General Model Settings:

S-B χ^2 (124df) = 205.45 (p < 0.01); SRMR= 0.088 TLI = 0.961; CFI = 0.968; RMSEA = 0.043 (0.039–0.063).

‡ Multigroup model settings

S-B χ^2 (255df) = 435.69 (p < 0.01); TLI = 0.975; CFI = 0.983; RMSEA = 0.034 (0.020–0.057).

Notes. * = p < 0.1; **p = <0.05; *** = p < 0.01, NS = Not Significant, β = Standard Coefficient, S-B χ^2 = χ^2 Satorra-Bentler, df = degrees of freedom, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index, RMSEA = Root Mean-Square Error of Approximation.

who already have recycling habits do not need to trust the government to accept a new policy, since they have enough experience and information to commit themselves to the standard. This is confirmed when analysing the effect size of trust in the acceptance of public policies: trust explains acceptance only when individuals have not incorporated recycling habits (d = 0.19 for the group without habits versus d = 0.04 for the group with habits). Thus, this research highlights the importance of examining the moderating effect of the factors that influence acceptance of public policies (Tseng et al., 2018; Wan et al., 2018).

With regard to the positive relationship between concern about reliability of public policy and its influence on acceptance by individuals (acceptance of H₂), we understand that the result is logical. People are involved in understanding the design, operation and impacts of the recycling system, everything which reduces uncertainty and facilitates cooperation (Mansbridge, 2014). Such concern is necessarily a consequence of high levels of citizens' environmental awareness to understand the advantages of a USW policy (Escario et al., 2022; Loan et al., 2017). Furthermore, individuals' concern about the design of public policies should not be conceived as a restriction on their implementation, but rather as a possibility of gaining support (Lee and Paik, 2011). Indeed, concern will promote citizen involvement by reducing individual resistance to the extent that the policy is properly designed.

Although the size of the effect of citizens' concern about the operation of a policy is low (d = 0.118), its contribution is significant and explains the citizen's acceptance of a public policy (Wan et al., 2018) and the preference for long-term oriented altruistic policies (Escario et al., 2022).

In line with Wang and Hao (2020), we have also verified the direct and positive relationship between public policy acceptance and intention to recycle (H₃). Citizens' positive attitude towards new regulations encourages them to carry out sustainable behaviours promoted by USW policy. In turn, the direct and positive role of social influence in the intention to recycle is confirmed (Blose et al., 2020; Labib et al., 2021), showing the central role of primary groups in the regulation of individual behaviour (H₄ acceptance). In addition, social influence encourages or pressures individuals, promoting them to act pro-socially (Xu et al., 2018).

Regarding the negative relationship between time risk and recycling intentions (H₅), the result is logical because if a person perceives that separating waste will lead to a significant loss of his/her discretionary time, his/her intention to recycle will decrease (Pedersen and Manhice, 2020; Rathore and Sarmah, 2021). We observed that the risk effect size on intentions is low (d = -0.324), however, it is the model variable with the greatest explanatory power in line with Farrow et al. (2017) and

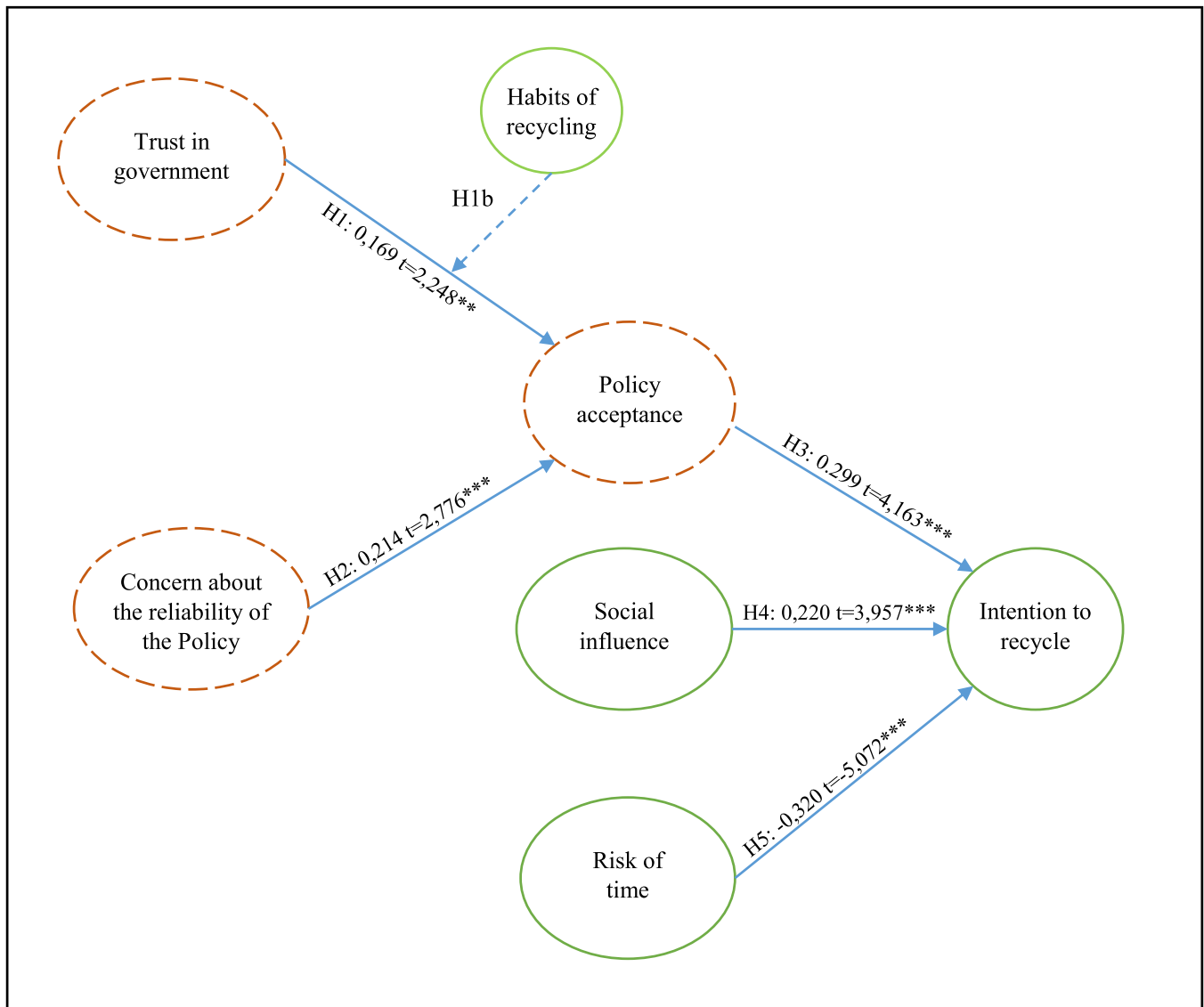


Fig. 1. Structural Relations Model, Notes. * = $p < 0.1$; ** $p < 0.05$; *** = $p < 0.01$, NS = Not Significant, β = Standard Coefficient, t = t-value. - Political factors ■ Psychological factors.

Loan et al. (2017). Therefore, people take into account the opportunity cost of the recycling effort, since the behaviour requested is voluntary and altruistic. Thus, government communications should clearly inform about the benefits of recycling and report on the efficiency of the USW policy to overcome the costs associated with recycling (Halvorsen, 2008).

6. Conclusions

Trust in government facilitates citizen participation in new environmental public policies. If the citizens have trusts, they believe that the government has the capacity and knowledge to handle the USW problem. In turn, recycling habits mitigate the effect of lack of trust by simplifying the cognitive effort of accepting a policy. Thus, if citizens have built-in recycling habits, they will participate in solidarity in the actions proposed by the USW. Hence, governments can engage citizens with recycling habits as facilitators and promoters of a new public policy. Moreover, citizens concerned about the quality of the USW manifest a cognitive predisposition that facilitates its acceptance. Therefore, it is relevant to segment citizens according to their recycling skills and their awareness on environmental issues in order to communicate specific

information for each group due to facilitate the acceptance of the USW.

On the other hand, the acceptance of a USW policy is an indirect environmental behaviour that influences recycling intentions. Thus, political factors linked to the institutional quality directly influence their recycling practices, so environmental behaviours are correlated - indirectly and directly - when they involve specific practices. In addition, citizens' cognitions linked to time risk and social pressure are relevant psychological factors that explain their intentions. Citizens evaluate recycling costs in terms of effort and time wasted. Therefore, governments should design simple recycling processes and messages informing of the simplicity of the tasks. In addition, intentions to recycle are regulated by the influence of the family and neighbours, making recycling practices a group behaviour.

This research has some limitations. First, it was carried out only in Córdoba city; therefore, the results cannot be generalized to another population as they may be influenced by cultural factors. Second, the trust-in-government construct was studied at the aggregate level without differentiating other political factors such as individual's confidence in political personalities, political parties or political instruments (Wan et al., 2017). Last, a novel USW policy was evaluated so that individuals were in the process of learning about its operation.

Future studies on the current topic are therefore recommended. Firstly, it is relevant to replicate the model in different socioeconomic and cultural contexts. Secondly, these causal relationships should be studied in other public policies that promote pro-environmental behaviours such as saving water or adopting sustainable energy. Finally, it would be useful to consider trust as a multidimensional construct to study in detail its dimensions and the acceptance of environmental public policies.

CRedit authorship contribution statement

Juan Manuel Bruno: Conceptualization, supervised the writing of the manuscript and the revisions, performed the statistical analyses and

created the supplementary material (Conceptualization, Methodology, Formal analysis, Writing – review & editing. **M. Enrique Carlos Bianchi:** Conceptualization, Writing and coordinated the field (Conceptualization, Writing, Resources), **Carolina Sánchez:** manuscript writing (writing, Investigation).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

APPENDIX - Scales used

Construct	Item	Variable	Reference
Intention to recycle	IR1	I intend to participate in recycling behaviour in the coming months.	Ramayah et al. (2012)
	IR2	I will try to participate in recycling behaviour in the coming months.	
	IR3	I am looking forward to participating in the recycling Beauvoir in the coming months.	
Policy acceptance	PA1	I agree that the Municipality implements policies aimed at home separation.	Rodríguez-Sánchez et al. (2018).
	PA2	What is your position when discussing the household waste separation policy with your family and friends?	
	PA4	When did you start separating waste at home?	
	PA5	I accept the municipal policy for the separation of household waste.	
		I agree with the home waste separation policy.	
Trust in government	TG1	The Municipality is doing a good job in urban recycling.	Poortinga and Pidgeon (2006).
	TG2	The Municipality acts in the interest of the public good.	
	TG3	The Municipality is competent enough.	
	TG4	The Municipality listens to what ordinary people think.	
	TG5	In general, I trust the government of Córdoba city.	
Concern about the reliability of the policy	CON1	I am concerned whether the waste separation policy will work as well as it is supposed to.	Loan et al. (2017).
	CON2	I am concerned that the waste separation policy will not provide the benefits I expect.	
	CON3	I am concerned about the reliability of the waste separation policy.	
Social influence	SI1	I learn a lot about recycling and waste separation from my friends.	Sinnappan and Rahman (2011).
	SI2	I learn a lot about environmental issues from my friends.	
	SI3	With my friends, we often buy recyclable products.	
	SI4	I share information on ecological issues with my friends.	
Risk of time	RT1	I think I will waste more time separating the waste.	Featherman and Pavlou (2003).
	RT2	As I change how I manage trash, separating waste at home will take more time.	
	RT3	It would be tough to spend time separating waste.	
	RT4	The possible loss of time due to having to separate waste would be high.	

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